PS

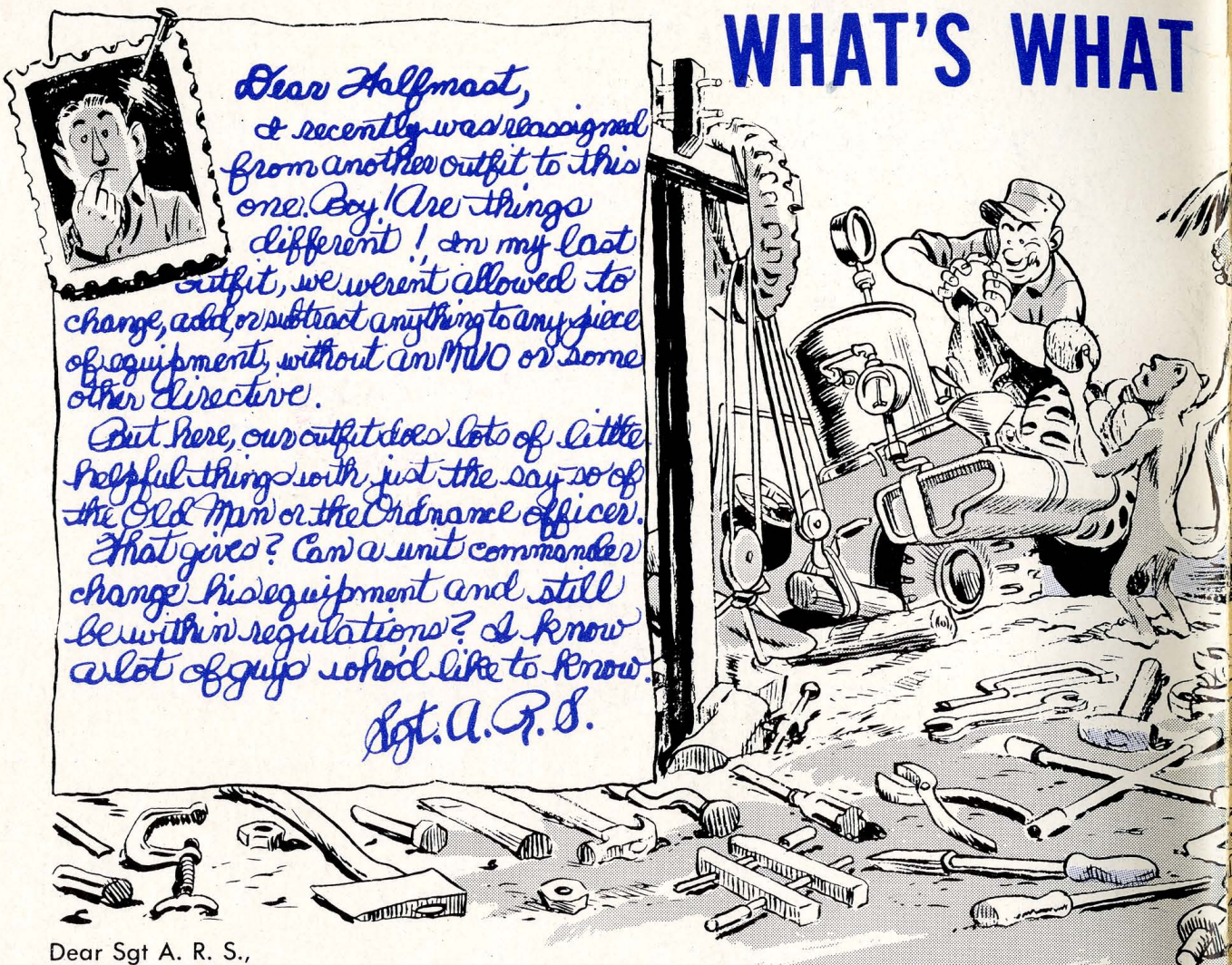
THE PREVENTIVE MAINTENANCE MONTHLY

Issue 25 1954 Series

M48 TANK OPERATION

(See Page 2)

WHAT'S WHAT



Dear Sgt A. R. S.,

The answer to that one is the difference between a field expedient and a modification. Also the difference between an overseas command and being back state-side, too.

A field expedient is what the Ordnance officer may decide should be done as a quick-fix to cut the cost and time for maintenance, increase combat or operating effectiveness, or to provide for the safety of men and equipment providing it doesn't affect the design of an adopted-type item. An adopted-type item is an approved standard item or acceptable substitute—your Ordnance officer knows what are and what aren't.

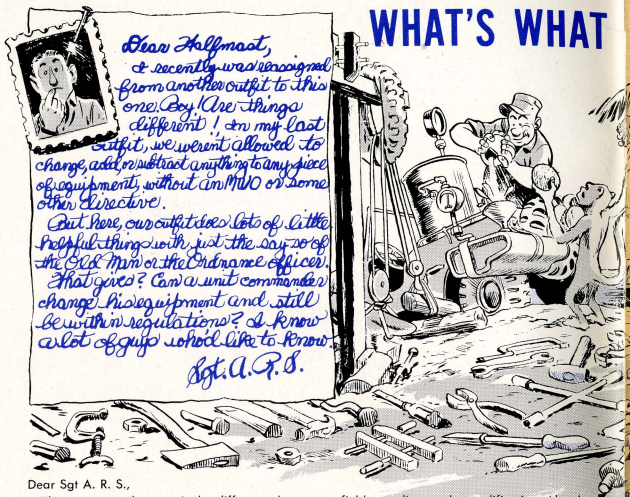
It's swell for the climate, terrain, or other special conditions. And it'll make the men using it a lot happier. With a good expedient, the equipment's more useful and should help you keep it that way.

But a modification's something else again.

It's a job that changes "the design or assemblage of an existing item of materiel of adopted-type or of development type allocated or issued to troops except development type items released solely for user test purposes."

(It's in the book, see AR 750-5, Changes 1, 2 and 3.)

WHAT'S WHAT ON MODIFICATIONS AND FIXES...



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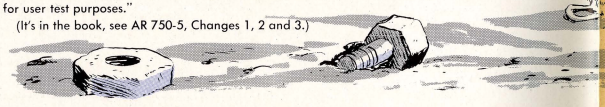

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The big difference is a field expedient cannot be any change in the design or assemblage of standard military equipment. An MWO has no such limitations.

All modifications approved by Office, Chief of Ordnance, come out as a Modification Work Order.

Half-Mast

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PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write to: **Editor, PS Magazine, Aberdeen Proving Ground, Maryland.**

The printing of PS Magazine, the PREVENTIVE MAINTENANCE MONTHLY, is approved by the Director, Bureau of the Budget (4 Aug 53), and is distributed as follows: ACTIVE ARMY: Gen Staff; DA (1); SS, DA (1); Tec Svc, DA (5) except Eng (75); Ord (275); Admin & Tec Svc Bd (5); AFF (10); OS Maj Comd (5); OS Base Comd (3); MDW (5); Armies (50); Corps (3); Div (2) except Armd (100); Eng (50); Brig (3); Regt (3); Bn (4); Co (15) except Cml, Med, QM (8); Ft & Cp (5); Gen & Br Svc Sch (5) except USMA (25); Ord Sch (50); Eng Sch (100); PMST ROTC Units (3) except Ord (25); Depots (5); Army Hosp (5); USA Hosp (5); RTC (100); POE (3); OS Sup Agencies (2); PG (5); Arsenals (25); OB (25); Cruit Main Sta (3); Engr Div (2); Engr Dist (20). NG & USAR: Special. Unless otherwise noted, distribution applies to CONUS and OS. For explanation of abbreviations used see SR 320-50-1.

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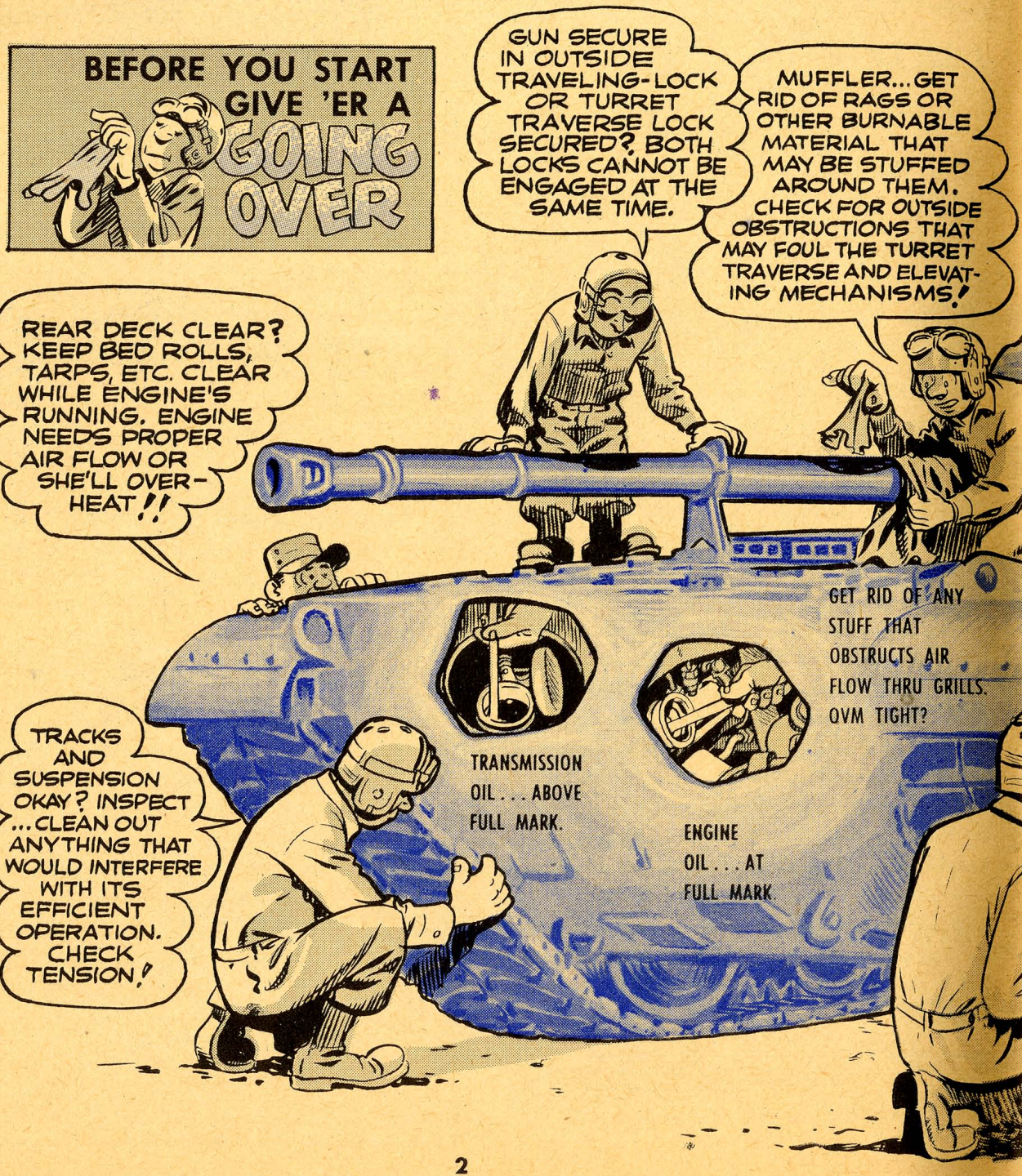
STARTIN', STOPPIN'... CARE AND OPERATIN'



STARTIN', STOPPIN'... CARE AND OPERATIN'

YOUR M48 TANK

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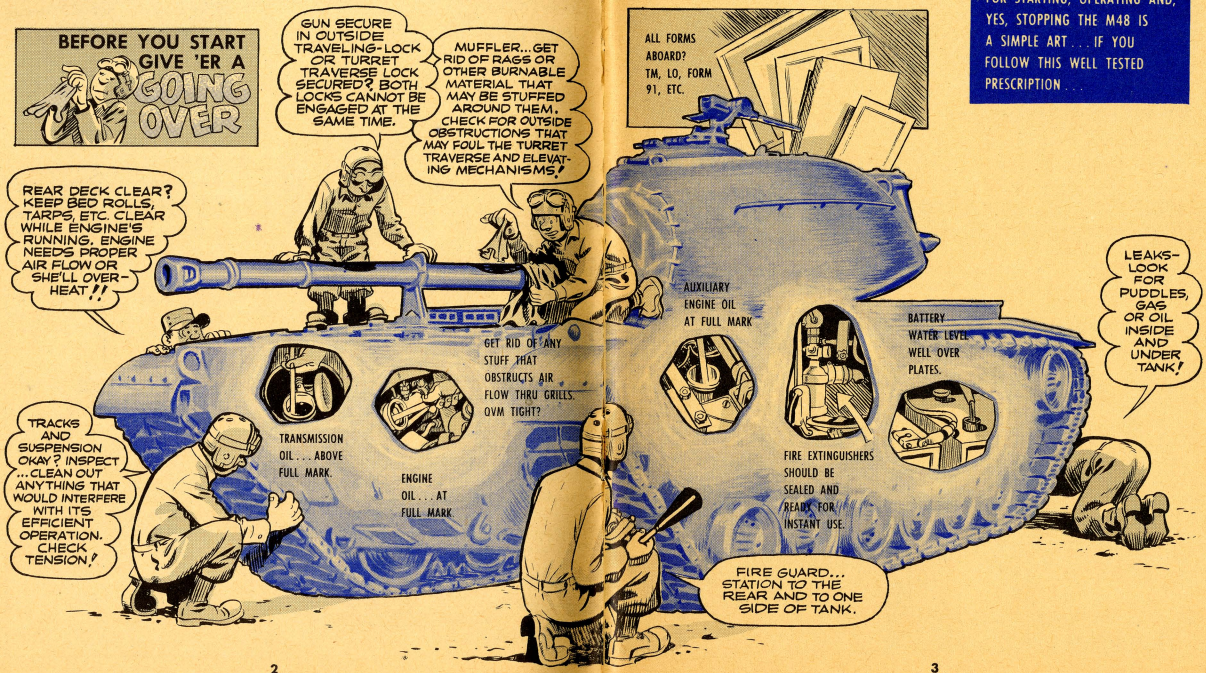

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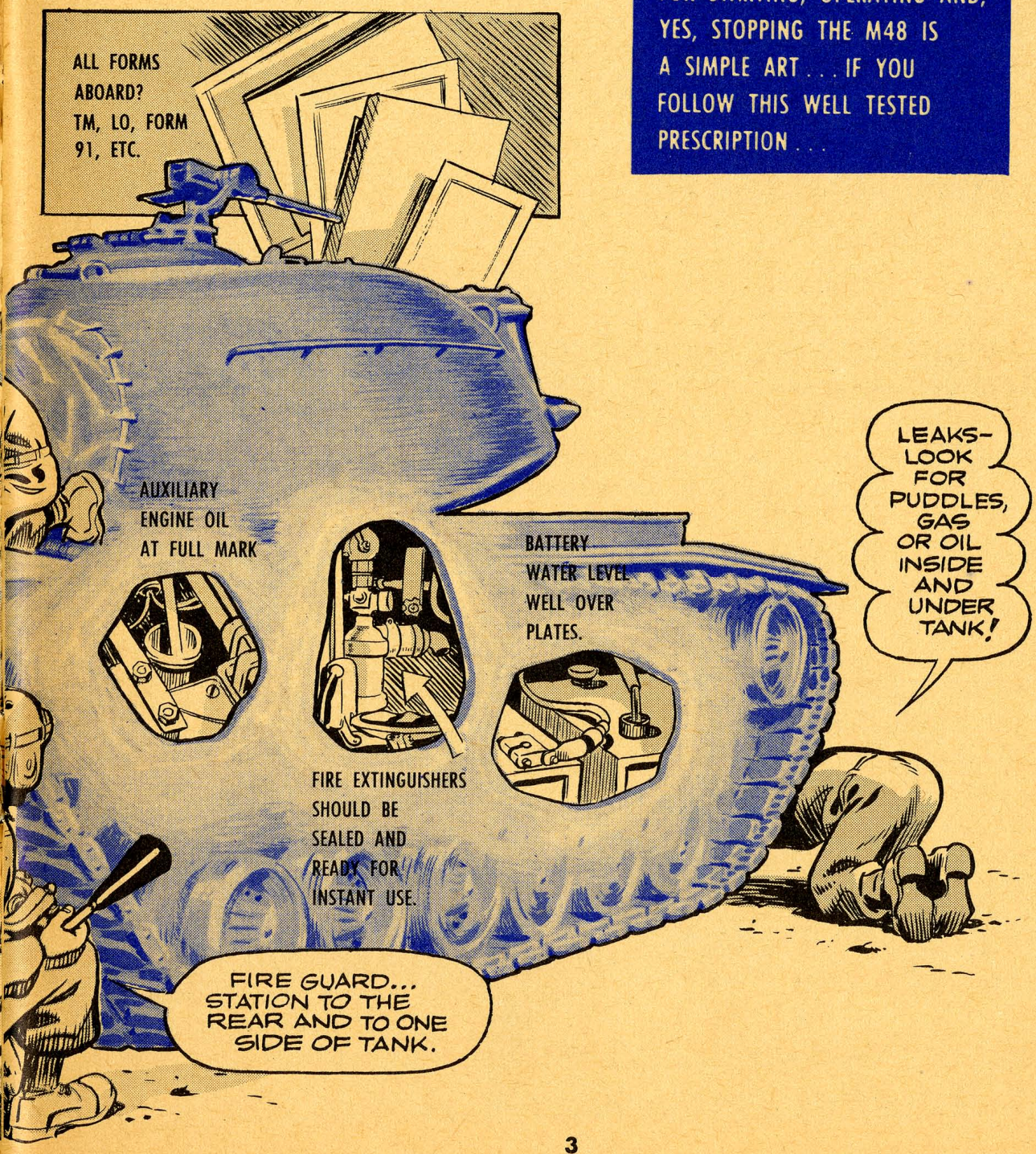
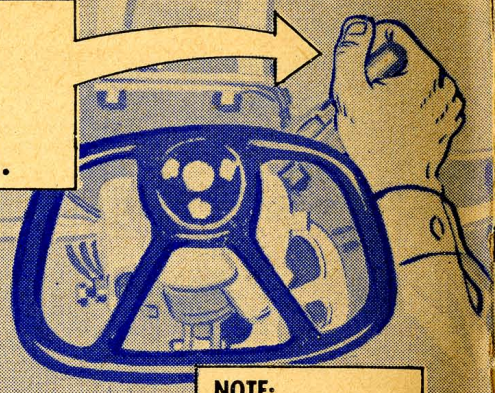


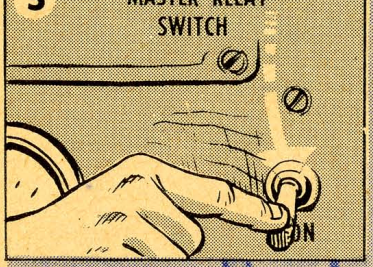
HOW TO START 'ER UP.....

1 SHIFT LEVER IN "PARK".



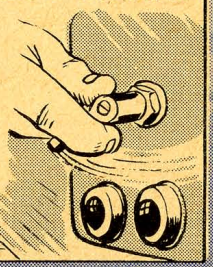
NOTE:
IF BATTERIES ARE DEAD OR TOO LOW TO CLOSE THE MASTER RELAY, USE A SLAVE CABLE HOOK-UP FROM A LIVE TANK OR HAND START THE AUXILIARY GENERATOR.

5 MASTER RELAY SWITCH



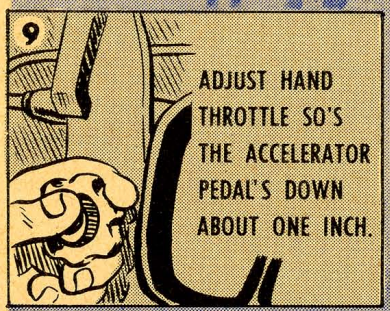
6 **AUXILIARY GENERATOR ENGINE**

START THIS FIRST IF BATTERIES ARE TOO LOW OR IF THE TEMPERATURE AROUND THE TANK IS BELOW FREEZING (32° F). RUN FOR FIVE MINUTES; THEN PROCEED.

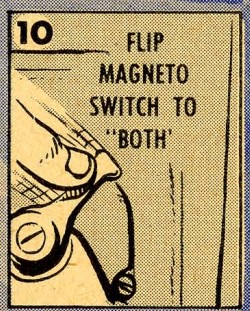


(IF THE ENGINE JAMS UP—YOU HAVE A HYDROSTATIC LOCK—**STOP.** REMOVE ONE SPARK PLUG FROM EACH CYLINDER AND PUMP LIQUID GAS FROM CYLINDERS.) WHEN DOING THIS, DEPRESS ACCELERATOR PEDAL ALL THE WAY DOWN. IF ALL'S CLEAR, TURN ENGINE OVER FIVE TIMES TO CLEAR CYLINDERS OF EXCESS GAS VAPORS. RELEASE ACCELERATOR PEDAL. PUT PLUGS BACK IN.

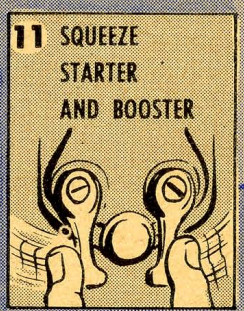
9 ADJUST HAND THROTTLE SO'S THE ACCELERATOR PEDAL'S DOWN ABOUT ONE INCH.



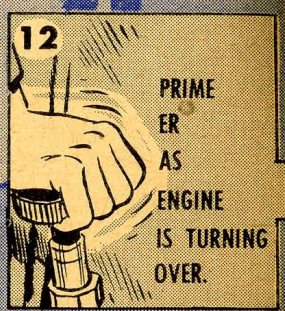
10 FLIP MAGNETO SWITCH TO "BOTH"



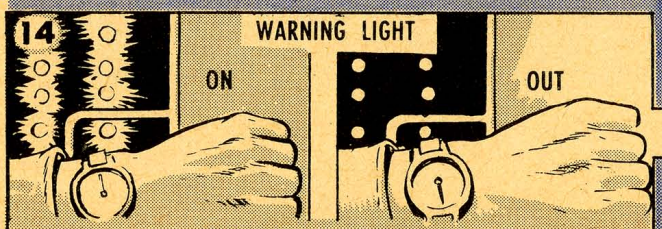
11 SQUEEZE STARTER AND BOOSTER



12 PRIME ER AS ENGINE IS TURNING OVER.



14 WARNING LIGHT



ALL LIGHTS SHOULD GO OUT WITHIN 30 SECONDS AFTER STARTING

(**NOTE**—IF LOW OIL PRESSURE AND GENERATOR WARNING LIGHT COME ON AT LOW IDLE (650-RPM) BUT GO OUT WHEN YOU REV UP THE ENGINE TO LITTLE ABOVE HIGH IDLE (1000-RPM), EVERYTHING IS OK.)

HOW TO START 'ER UP....

1 SHIFT LEVER IN "PARK".

2 SET PARKING BRAKE

3 RADIO MAIN SWITCH

OFF

4 FUEL SHUT-OFF VALVE BOTH TANKS OPEN

AND TURN OFF ALL OTHER ACCESSORY SWITCHES.

5 MASTER RELAY SWITCH

ON

6 AUXILIARY GENERATOR ENGINE

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7 STARTER SWITCH MAGNETOS OFF.

8 START

ON-OFF-ON-OFF TO FEEL-OUT THE ENGINE FOR HYDROSTATIC LOCK. TURN ENGINE OVER ONE STROKE AT A TIME FOR THREE OR FOUR REVOLUTIONS.

(IF THE ENGINE JAMS UP—YOU HAVE A HYDROSTATIC LOCK—**STOP.** REMOVE ONE SPARK PLUG FROM EACH CYLINDER AND PUMP LIQUID GAS FROM CYLINDERS.) WHEN DOING THIS, DEPRESS ACCELERATOR PEDAL ALL THE WAY DOWN. IF ALL'S CLEAR, TURN ENGINE OVER FIVE TIMES TO CLEAR CYLINDERS OF EXCESS GAS VAPORS. RELEASE ACCELERATOR PEDAL. PUT PLUGS BACK IN.

CAREFUL

AFTER PLUGS HAVE BEEN INSTALLED AND THE ENGINE IS AGAIN READY FOR OPERATION, OPEN HULL DRAIN-VALVES AND FLUSH LIQUID GASOLINE OFF THE ENGINE WITH WATER AND TOW THE TANK OUT OF THE IMMEDIATE AREA AND ALLOW 10 OR 15 MINUTES FOR VAPORS TO EVAPORATE BEFORE STARTING ENGINE.

9 ADJUST HAND THROTTLE SO'S THE ACCELERATOR PEDAL'S DOWN ABOUT ONE INCH.

10 FLIP MAGNETO SWITCH TO "BOTH"

11 SQUEEZE STARTER AND BOOSTER

12 PRIME ER AS ENGINE IS TURNING OVER.

AMOUNT OF PRIMING DEPENDS ON HOW COLD ENGINE IS . . . IF IT'S HOT, VERY LITTLE OR NO PRIMING. **NOTE**—PRIMING BEFORE THE ENGINE IS TURNING OVER DOESN'T DO ANY GOOD . . . MAY CAUSE HYDROSTATIC LOCK.

13 LET GO STARTER AND BOOSTER.

BOOSTER IS ONLY NEEDED TO START ENGINE. ITS LIFE IS ABOUT 5 MINUTES OF CONTINUED USE—GO EASY.

IF CRANKING THE ENGINE FOR 30 CONTINUOUS SECONDS FAILS TO START IT, RELEASE THE STARTER AND BOOSTER, WAIT A FEW SECONDS AND TRY AGAIN. IF IT FAILS TO START IN THREE TRIES, STOP, WAIT FOR 5 MINUTES TO LET THE STARTER COOL AND TRY AGAIN. (NEVER HOLD STARTER ON LONGER THAN 30 SECONDS.)

14 WARNING LIGHT

ON

OUT

ALL LIGHTS SHOULD GO OUT WITHIN 30 SECONDS AFTER STARTING

(**NOTE**—IF LOW OIL PRESSURE AND GENERATOR WARNING LIGHT COME ON AT LOW IDLE (650-RPM) BUT GO OUT WHEN YOU REV UP THE ENGINE TO LITTLE ABOVE HIGH IDLE (1000-RPM), EVERYTHING IS OK.)

15 OFF RUN START

IF YOU'VE BEEN USING THE AUXILIARY (STARTED BEFORE THE MAIN ENGINE) TURN IT OFF.

16 FUEL GAGES LIKE THIS

F

F

2 SET PARKING BRAKE

3 RADIO MAIN SWITCH

OFF

4 FUEL
SHUT-OFF VALVE
BOTH TANKS OPEN

AND TURN OFF ALL OTHER ACCESSORY SWITCHES.

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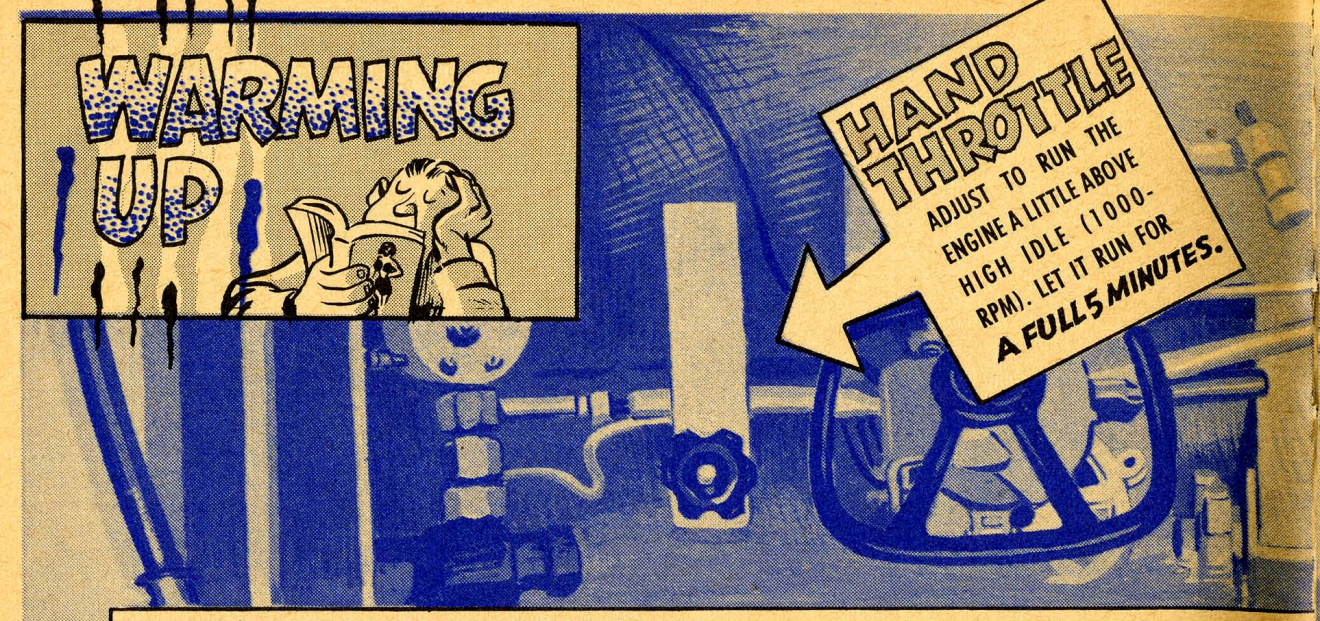
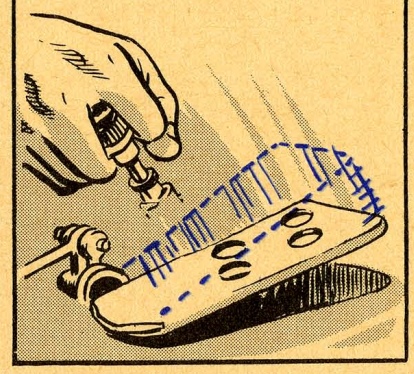
F F

WARMING UP



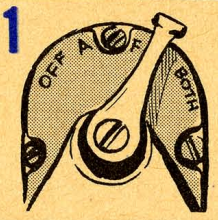
MAGNETOS

AFTER ENGINE'S WARMED UP, ADJUST HAND THROTTLE SO THE ENGINE WILL REV UP TO ABOUT 2500-RPM (ACCELERATOR PEDAL ABOUT 2/3 WAY DOWN).



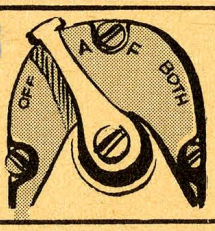
THEN DO THE

1



FLIP THE MAGNETO SWITCH TO **F** POSITION AND LISTEN IF THERE'S A BIG DROP IN ENGINE SPEED OR IF IT SOUNDS LIKE A PLUG IS MISFIRING. NORMALLY THERE SHOULD BE A SLIGHT DROP IN SPEED AND NO SPITTIN' AND SPUTTERING.

3

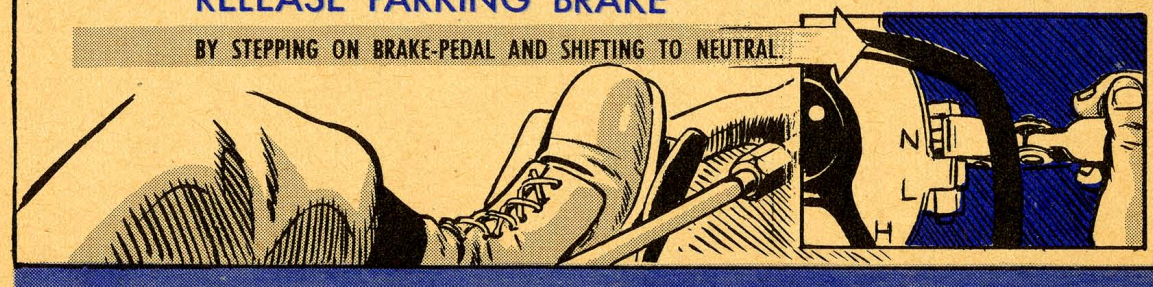


NOW FLIP THE SWITCH TO **A** AND AGAIN LISTEN FOR ANY BIG DROP IN SPEED OR MISFIRING PLUGS.

NOTE—
IF ENGINE ACTS UP IN EITHER **F** OR **A**, YOU HAVE IGNITION TROUBLES.

RELEASE PARKING BRAKE

BY STEPPING ON BRAKE-PEDAL AND SHIFTING TO NEUTRAL.



WARMING UP

HAND THROTTLE — ADJUST TO RUN THE ENGINE A LITTLE ABOVE HIGH IDLE (1000-RPM). LET IT RUN FOR ***A FULL 5 MINUTES.***

OIL PRESSURE GAGE — WITH OE 50 IN CRANKCASE A WARM ENGINE SHOULD READ 60-70 PSI. WITH OE 10 IN CRANKCASE SHOULD READ 35-50 PSI.

TRANSMISSION OIL LEVEL — SLIGHTLY ABOVE FULL

MAGNETOS

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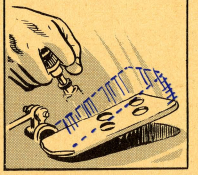

THEN DO THE FOLLOWING

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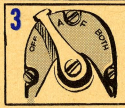
3 

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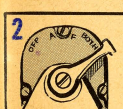
2 

AFTER **F** CHECKS OUT OK, FLIP THE SWITCH TO **BOTH** AND RUN FOR ABOUT A MINUTE. THIS'LL CLEAR ANY CARBON FROM THE PLUGS.

4

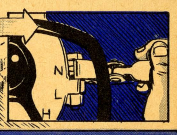
WHEN TEST IS COMPLETE, FLIP THE SWITCH BACK TO **BOTH** AND RELEASE THROTTLE TO IDLE.

YOU NEVER TURN THE MAGNETO SWITCH TO **OFF** POSITION WHILE THE ENGINE'S RUNNING. IF IT SHOULD ACCIDENTALLY GET PUSHED TO **OFF**, BE CAREFUL **NOT** TO SWITCH IT TO **A** OR **F** OR **BOTH** IF YOU DO, THERE COULD BE A BAD EXPLOSION. INSTEAD, LEAVE IT AT **OFF** AND PRESS AND HOLD IN THE DEGASSER SWITCH TILL THE ENGINE STOPS.

NEVER RUN ENGINE MORE THAN ONE MINUTE IN EITHER POSITION.

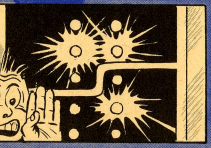
RELEASE PARKING BRAKE

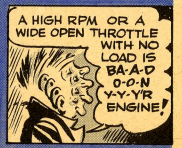
BY STEPPING ON BRAKE-PEDAL AND SHIFTING TO NEUTRAL.

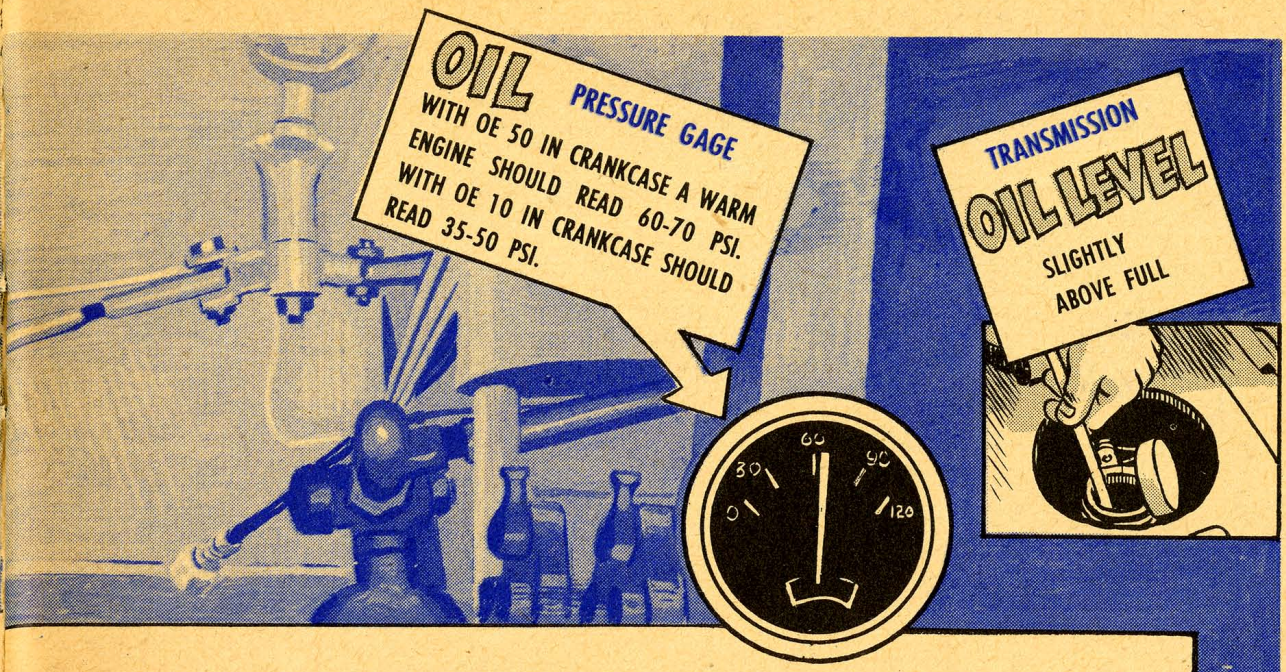


WARNING LIGHT

IF HIGH TEMPERATURE, ENGINE OR TRANSMISSION WARNING LIGHT COME ON, BROTHER . . . STOP THEN AND THERE.

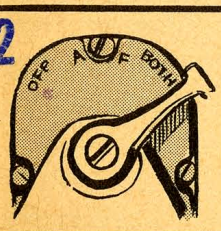






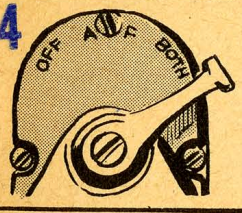
FOLLOWING

2



AFTER **F** CHECKS OUT OK, FLIP THE SWITCH TO **BOTH** AND RUN FOR ABOUT A MINUTE. THIS'LL CLEAR ANY CARBON FROM THE PLUGS.

4



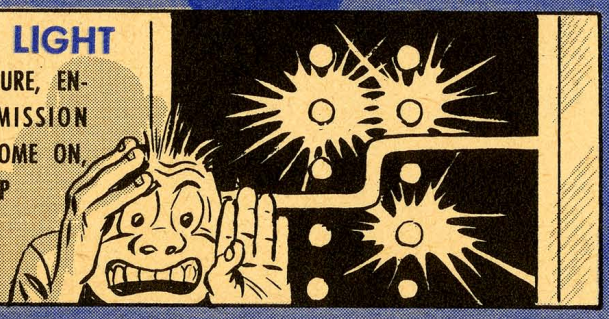
WHEN TEST IS COMPLETE, FLIP THE SWITCH BACK TO **BOTH** AND RELEASE THROTTLE TO IDLE.

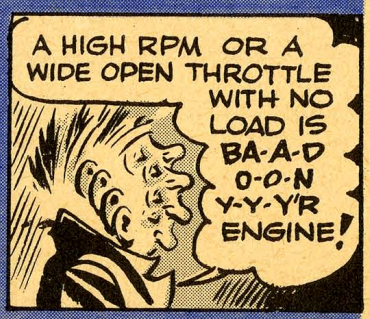
NEVER RUN ENGINE MORE THAN ONE MINUTE IN EITHER POSITION.

YOU NEVER TURN THE MAGNETO SWITCH TO **OFF** POSITION WHILE THE ENGINE'S RUNNING. IF IT SHOULD ACCIDENTALLY GET PUSHED TO **OFF**, BE CAREFUL **NOT** TO SWITCH IT TO **A** OR **F** OR **BOTH** IF YOU DO, THERE COULD BE A BAD EXPLOSION. INSTEAD, LEAVE IT AT **OFF** AND PRESS AND HOLD IN THE DEGASSER SWITCH TILL THE ENGINE STOPS.

WARNING LIGHT

IF HIGH TEMPERATURE, ENGINE OR TRANSMISSION WARNING LIGHT COME ON, BROTHER . . . STOP THEN AND THERE.

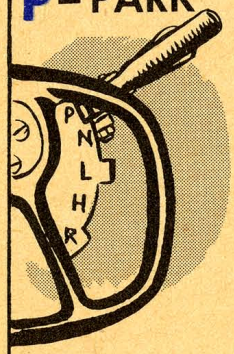




LET'S GO

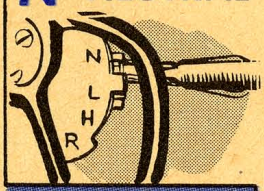
SHIFTING

P – PARK



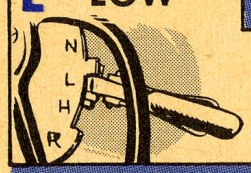
PARKING BRAKES ARE LOCKED ON AND STEERING WHEEL IS LOCKED IN A NEUTRAL POSITION. TO RELEASE BRAKES, PRESS DOWN ON THE BRAKE PEDAL AND SHIFT INTO NEUTRAL. A REMINDER—MOVING THE LEVER INTO PARK DOESN'T AUTOMATICALLY LOCK THE BRAKES—THE BRAKE PEDAL MUST BE JAMMED DOWN AFTER THE LEVER IS PUT INTO PARK.

N – NEUTRAL



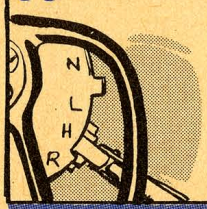
COMING FROM PARK, SQUEEZE THE HAND GRIP AND PULL THE LEVER TO POSITION BETWEEN PARK AND LOW. YOU ONLY SQUEEZE THE LEVER WHEN THE TANK IS AT A STANDSTILL.

L – LOW



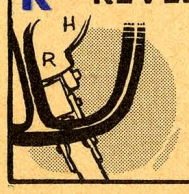
NEXT NOTCH DOWN FROM NEUTRAL.

H – HIGH



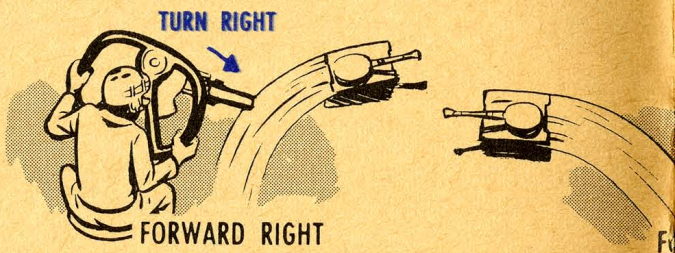
DOWN ONE NOTCH FROM LOW. NOW GET THIS: IT'S EASY TO SHIFT INTO REVERSE WHEN INTENDING TO GO INTO HIGH IF YOU SQUEEZE THE LEVER SO DON'T SQUEEZE WHEN IN MOTION.

R – REVERSE



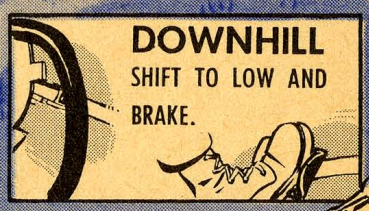
FIRST BE SURE THE TANK IS AT A DEAD STOP THEN SQUEEZE THE CONTROL LEVER AND PULL TO EXTREME LOWER POSITION.

A LIGHT STEADY PRESSURE



ACCELERATOR E-A-S-Y OR YOU'LL STRAIN OIL-COOLER FAN ASSEMBLIES.

DOWN-SHIFT . . . FROM HIGH TO LOW ONLY UNDER 7-MPH. THEN STEP ON THE GAS HARD FOR TWO SECONDS, THEN PUSH LEVER UP ONE NOTCH (DON'T SQUEEZE).



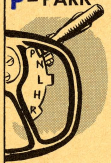
DOWNHILL
SHIFT TO LOW AND BRAKE.

UP-SHIFT
CAN BE MADE AT 7-MPH AND UP TO 11-MPH. DECELERATE SLIGHTLY.

LET'S GO

SHIFTING

P – PARK



PARKING BRAKES ARE LOCKED ON AND STEERING WHEEL IS LOCKED IN A NEUTRAL POSITION. TO RELEASE BRAKES, PRESS DOWN ON THE BRAKE PEDAL AND SHIFT INTO NEUTRAL. A REMINDER—MOVING THE LEVER INTO PARK DOESN'T AUTOMATICALLY LOCK THE BRAKES—THE BRAKE PEDAL MUST BE JAMMED DOWN AFTER THE LEVER IS PUT INTO PARK.

N – NEUTRAL

COMING FROM PARK, SQUEEZE THE HAND GRIP AND PULL THE LEVER TO POSITION BETWEEN PARK AND LOW. YOU ONLY SQUEEZE THE LEVER WHEN THE TANK IS AT A STAND-STILL.

L – LOW

NEXT NOTCH DOWN FROM NEUTRAL.

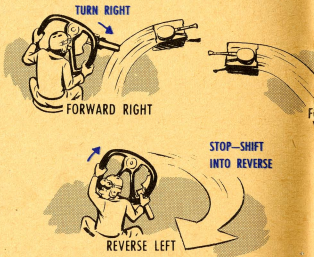
H – HIGH

DOWN ONE NOTCH FROM LOW. NOW GET THIS: IT'S EASY TO SHIFT INTO REVERSE WHEN INTENDING TO GO INTO HIGH IF YOU SQUEEZE THE LEVER SO DON'T SQUEEZE WHEN IN MOTION.

R – REVERSE

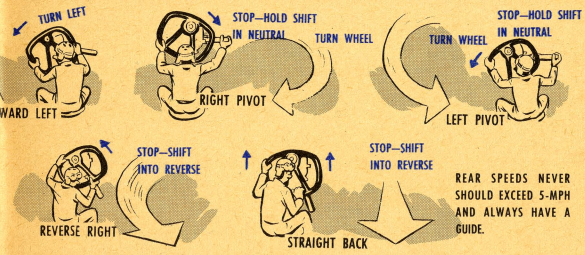
FIRST BE SURE THE TANK IS AT A DEAD STOP THEN SQUEEZE THE CONTROL LEVER AND PULL TO EXTREME LOWER POSITION.

A LIGHT STEADY PRESSURE



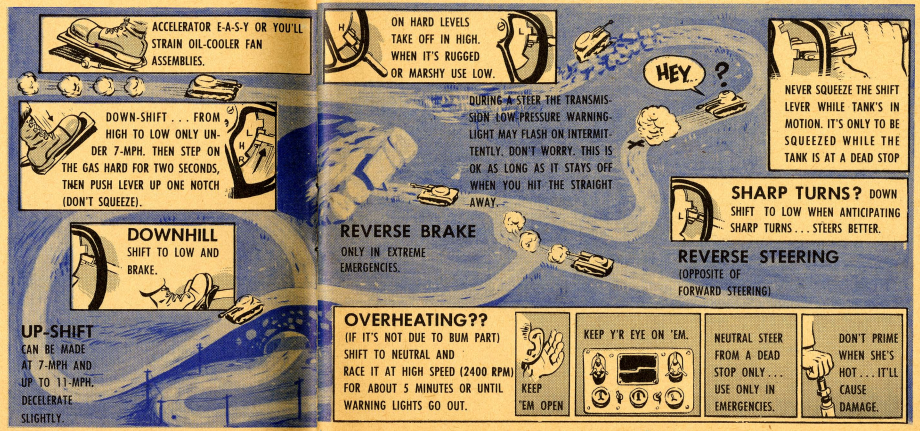
STEERING

IS ALL YOU NEED ON THE WHEEL... NO JERKS!



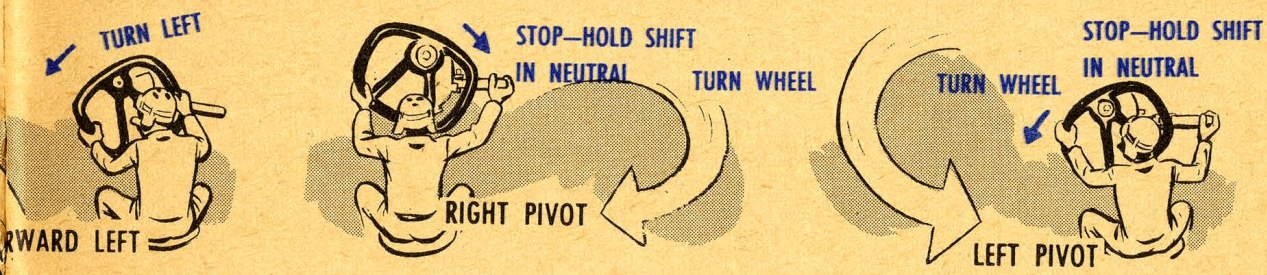
REAR SPEEDS NEVER SHOULD EXCEED 5-MPH AND ALWAYS HAVE A GUIDE.

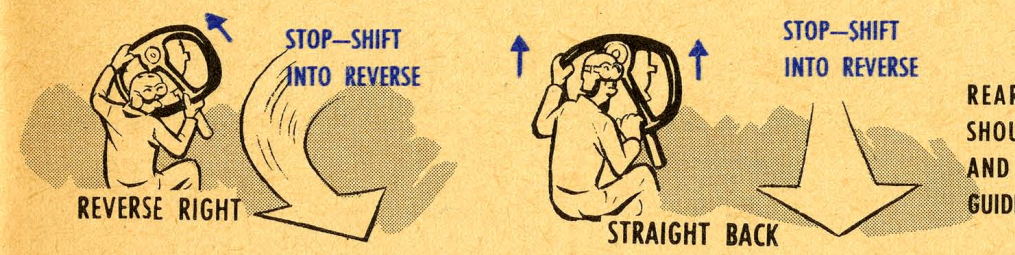
OPERATING



STEERING

IS ALL YOU NEED ON THE WHEEL... NO JERKS!



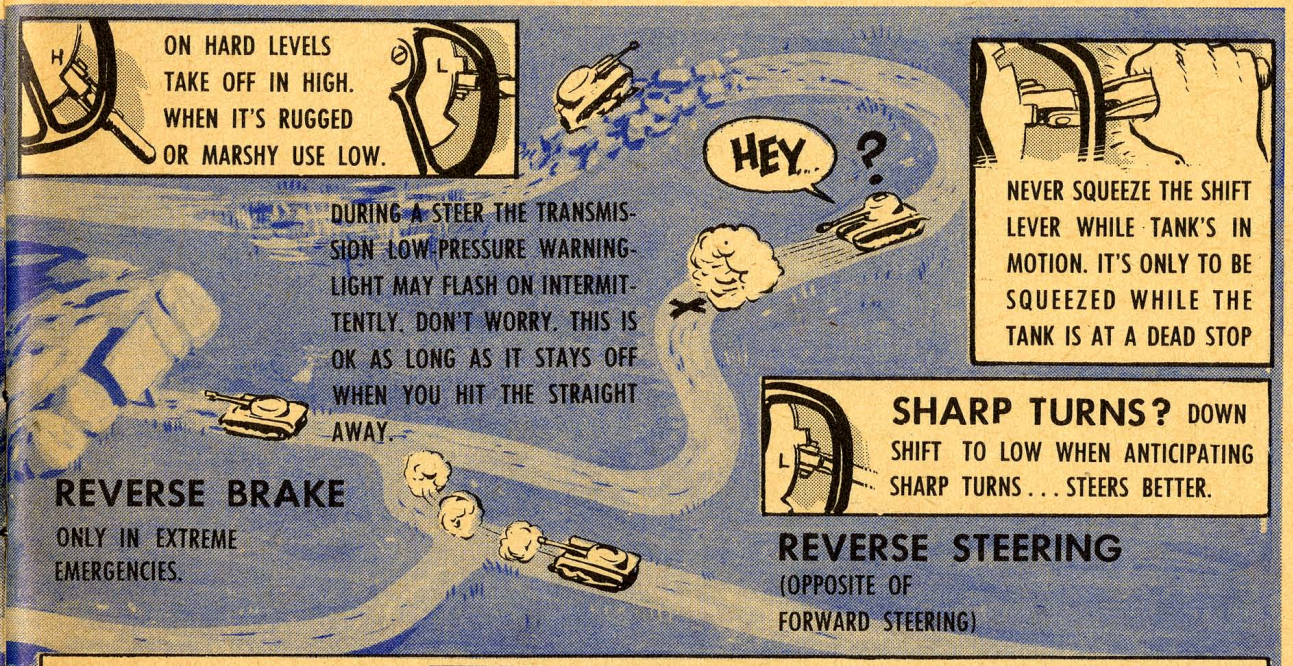


REAR SPEEDS NEVER SHOULD EXCEED 5-MPH AND ALWAYS HAVE A GUIDE.

OPERATING

ON HARD LEVELS TAKE OFF IN HIGH. WHEN IT'S RUGGED OR MARSHY USE LOW.

NEVER SQUEEZE THE SHIFT LEVER WHILE TANK'S IN MOTION. IT'S ONLY TO BE SQUEEZED WHILE THE TANK IS AT A DEAD STOP



DURING A STEER THE TRANSMISSION LOW PRESSURE WARNING-LIGHT MAY FLASH ON INTERMITTENTLY. DON'T WORRY. THIS IS OK AS LONG AS IT STAYS OFF WHEN YOU HIT THE STRAIGHT AWAY.

SHARP TURNS? DOWN SHIFT TO LOW WHEN ANTICIPATING SHARP TURNS... STEERS BETTER.

REVERSE BRAKE

ONLY IN EXTREME EMERGENCIES.

REVERSE STEERING

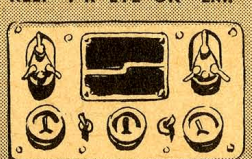
(OPPOSITE OF FORWARD STEERING)

OVERHEATING??

(IF IT'S NOT DUE TO BUM PART) SHIFT TO NEUTRAL AND RACE IT AT HIGH SPEED (2400 RPM) FOR ABOUT 5 MINUTES OR UNTIL WARNING LIGHTS GO OUT.

KEEP 'EM OPEN

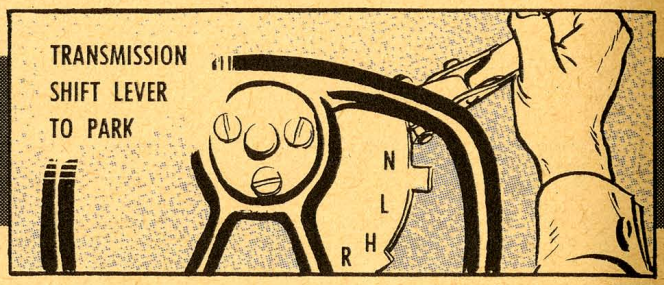
KEEP Y'R EYE ON 'EM.

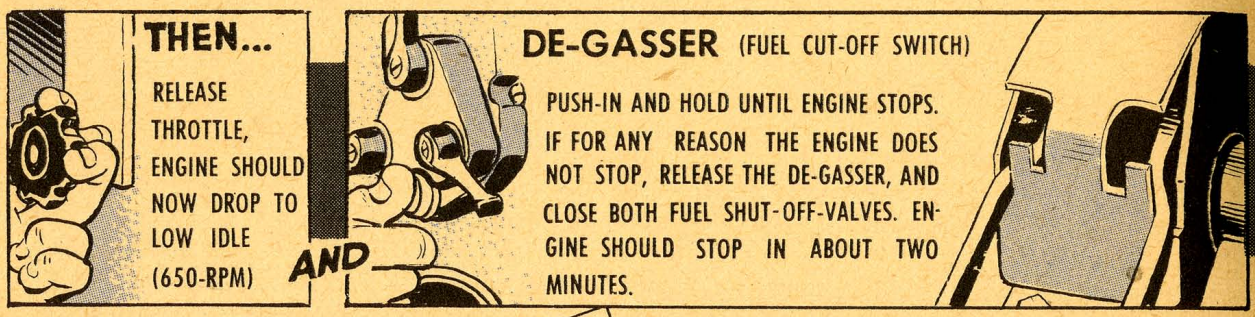


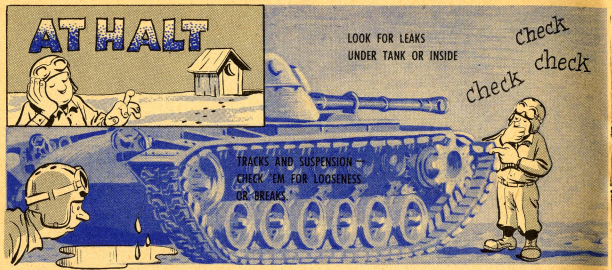
NEUTRAL STEER FROM A DEAD STOP ONLY... USE ONLY IN EMERGENCIES.

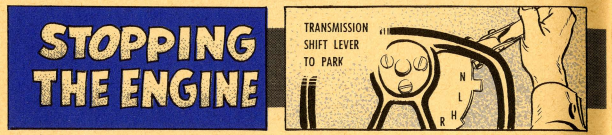
DON'T PRIME WHEN SHE'S HOT... IT'LL CAUSE DAMAGE.

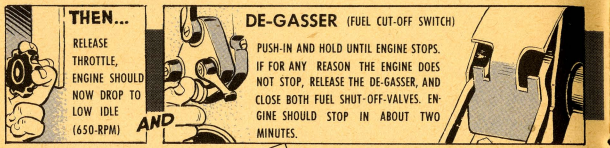
STOPPING THE ENGINE



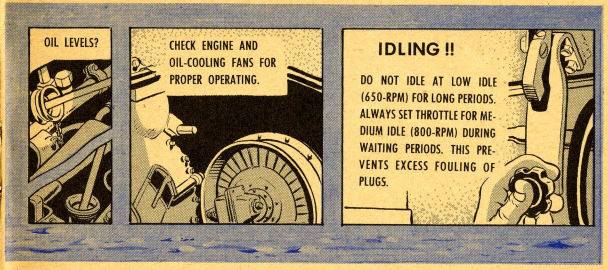


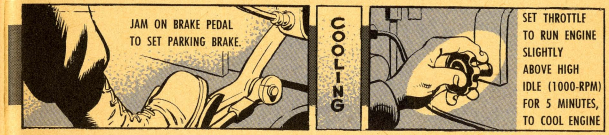

AT HALT
LOOK FOR LEAKS UNDER TANK OR INSIDE
check
check
check
TRACKS AND SUSPENSION — CHECK 'EM FOR LOOSENESS OR BREAKS.

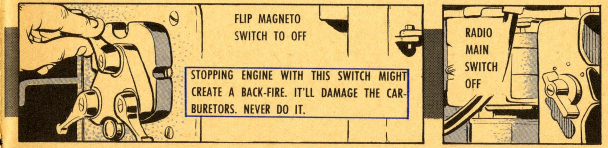

STOPPING THE ENGINE
TRANSMISSION SHIFT LEVER TO PARK
N
L
R
H


THEN...
RELEASE THROTTLE, ENGINE SHOULD NOW DROP TO LOW IDLE (650-RPM)
AND
DE-GASSER (FUEL CUT-OFF SWITCH)
PUSH-IN AND HOLD UNTIL ENGINE STOPS. IF FOR ANY REASON THE ENGINE DOES NOT STOP, RELEASE THE DE-GASSER, AND CLOSE BOTH FUEL SHUT-OFF-VALVES. ENGINE SHOULD STOP IN ABOUT TWO MINUTES.

TURRET POWER
OFF
ALL OFF
FIRE AND TURRET CONTROL SWITCHES . . . ALL OFF. PLUS ALL OTHER ACCESSORIES, HEATER, LIGHTS, ETC. PERSONNEL HEATERS MUST NOT BE TURNED OFF WITH EMERGENCY SWITCH. ALLOW THEM TO PURGE.
VENTILATOR
ON
OFF
NOTE—IF RADIO OR TURRET ARE TO BE USED, START UP LITTLE JOE.


OIL LEVELS?
CHECK ENGINE AND OIL-COOLING FANS FOR PROPER OPERATING.
IDLING !!
DO NOT IDLE AT LOW IDLE (650-RPM) FOR LONG PERIODS. ALWAYS SET THROTTLE FOR MEDIUM IDLE (800-RPM) DURING WAITING PERIODS. THIS PREVENTS EXCESS FOULING OF PLUGS.


JAM ON BRAKE PEDAL TO SET PARKING BRAKE.
COOLING
SET THROTTLE TO RUN ENGINE SLIGHTLY ABOVE HIGH IDLE (1000-RPM) FOR 5 MINUTES, TO COOL ENGINE


FLIP MAGNETO SWITCH TO OFF
STOPPING ENGINE WITH THIS SWITCH MIGHT CREATE A BACK-FIRE. IT'LL DAMAGE THE CARBURETORS. NEVER DO IT.
RADIO MAIN SWITCH OFF

OFF
MASTER
FLIP MASTER SWITCH TO OFF
IF TANK IS TO BE PARKED FOR ANY LENGTH OF TIME, CLOSE FUEL SHUT-OFF VALVES.

OIL LEVELS?

CHECK ENGINE AND OIL-COOLING FANS FOR PROPER OPERATING.

IDLING !!

DO NOT IDLE AT LOW IDLE (650-RPM) FOR LONG PERIODS. ALWAYS SET THROTTLE FOR MEDIUM IDLE (800-RPM) DURING WAITING PERIODS. THIS PREVENTS EXCESS FOULING OF PLUGS.

JAM ON BRAKE PEDAL TO SET PARKING BRAKE.

COOLING

SET THROTTLE TO RUN ENGINE SLIGHTLY ABOVE HIGH IDLE (1000-RPM) FOR 5 MINUTES, TO COOL ENGINE

FLIP MAGNETO SWITCH TO OFF

STOPPING ENGINE WITH THIS SWITCH MIGHT CREATE A BACK-FIRE. IT'LL DAMAGE THE CARBURETORS. NEVER DO IT.

RADIO MAIN SWITCH OFF

OFF

MASTER

FLIP MASTER SWITCH TO OFF

IF TANK IS TO BE PARKED FOR ANY LENGTH OF TIME, CLOSE FUEL SHUT-OFF VALVES.

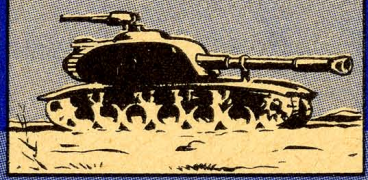
AFTER OPERATING SERVICE

OIL LEVELS . . . BRING ENGINE, TRANSMISSION, AUXILIARY ENGINE AND HYDRAULIC POWER UNIT OIL LEVELS UP TO SNUFF.

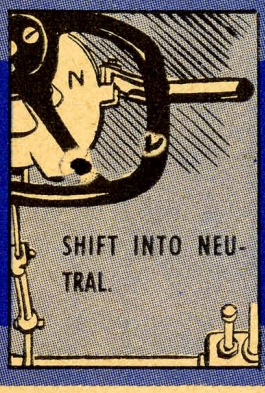
CLEAN . . . EXCESS MUD AND DIRT FROM INSIDE AND OUTSIDE OF TANK.

TOW STARTIN'

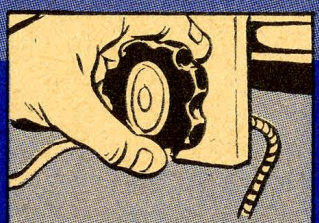
TANK MUST BE ON LEVEL GROUND.



CONNECT TOW CABLE TO TOWING HOOKS—AVOID PULLING WITH TOW BAR BECAUSE THE TOW PINTLE MAY SNAP OFF—IT'S ONLY TO BE USED TO TOW LIGHT STUFF (5000 POUNDS AND UNDER).

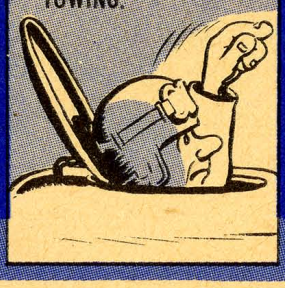


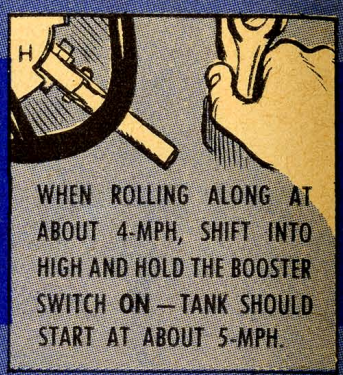
SHIFT INTO NEUTRAL.



SET THROTTLE SO THE ENGINE WILL RUN A LITTLE ABOVE A FAST IDLE (1200-RPM).

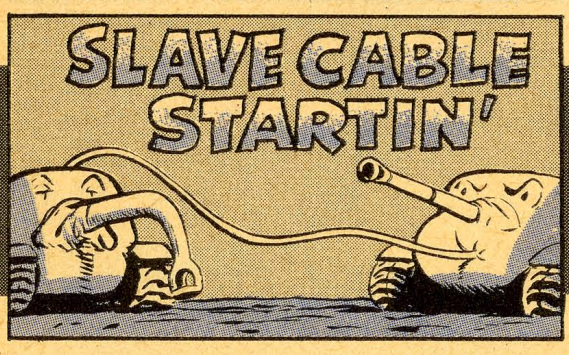
SIGNAL TO THE OBSERVER TO START TOWING.



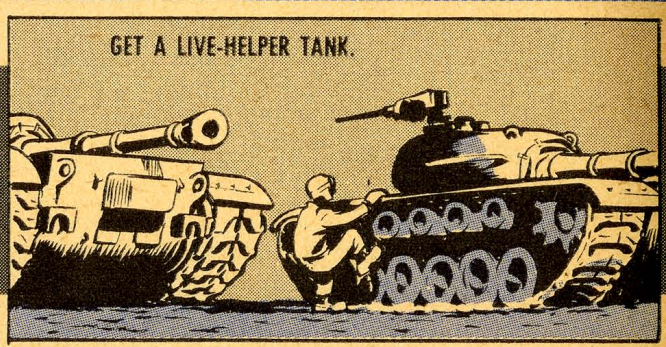


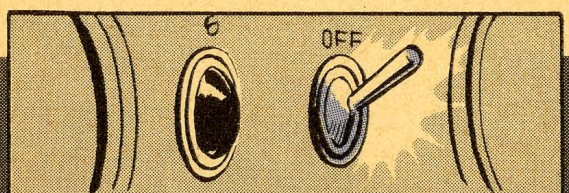
WHEN ROLLING ALONG AT ABOUT 4-MPH, SHIFT INTO HIGH AND HOLD THE BOOSTER SWITCH **ON**—TANK SHOULD START AT ABOUT 5-MPH.

SLAVE CABLE STARTIN'

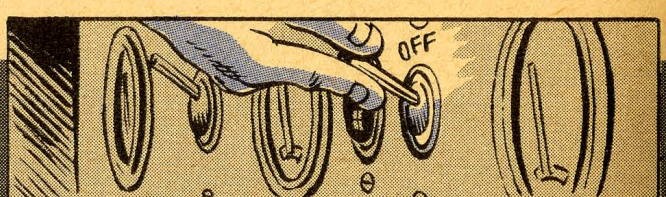


GET A LIVE-HELPER TANK.





IN YOUR DEAD TANK, LEAVE THE MASTER-RELAY SWITCH **OFF**, THEN START THE ENGINE THE NORMAL WAY.



STOP THE ENGINE IN THE LIVE-HELPER TANK AND TURN **OFF** ITS MASTER-RELAY SWITCH.

AFTER OPERATING SERVICE

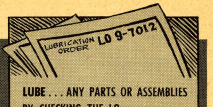
OIL LEVELS . . . BRING ENGINE, TRANSMISSION, AUXILIARY ENGINE AND HYDRAULIC POWER UNIT OIL LEVELS UP TO SNUFF.

CLEAN . . . EXCESS MUD AND DIRT FROM INSIDE AND OUTSIDE OF TANK.

LEAKS. . . INSPECT FOR POSSIBLE ENGINE OIL, HYDRAULIC OIL OR GAS LEAKS.

FUEL TANKS . . . REFILL.

OVM . . . CHECK IF ALL PRESENT AND ACCOUNTED FOR.



LUBE . . . ANY PARTS OR ASSEMBLIES BY CHECKING THE LO.

TOW STARTIN'

TANK MUST BE ON LEVEL GROUND.

CONNECT TOW CABLE TO TOWING HOOKS—AVOID PULLING WITH TOW BAR BECAUSE THE TOW PINTLE MAY SNAP OFF—IT'S ONLY TO BE USED TO TOW LIGHT STUFF (5000 POUNDS AND UNDER).

PUT AN OBSERVER ON THE TOWING TANK.

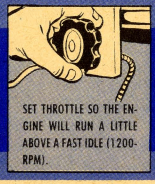
RELEASE PARKING BRAKE.

OPEN FUEL SHUT-OFF-VALVES.

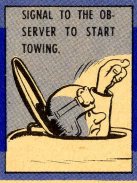
TURN ON MASTER-RELAY SWITCH.

SWITCH MAGNETOS TO BOTH POSITION.

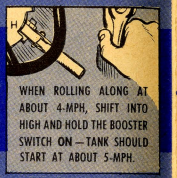
SHIFT INTO NEUTRAL.



SET THROTTLE SO THE ENGINE WILL RUN A LITTLE ABOVE A FAST IDLE (1200-RPM).



SIGNAL TO THE OBSERVER TO START TOWING.



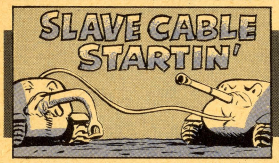
WHEN ROLLING ALONG AT ABOUT 4-MPH, SHIFT INTO HIGH AND HOLD THE BOOSTER SWITCH ON—TANK SHOULD START AT ABOUT 5-MPH.

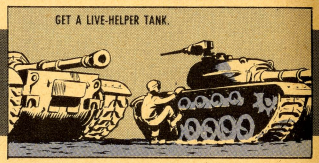
IF YOU NEED MORE GAS, PUMP THE ACCELERATOR PEDAL (THIS IS ABOUT THE ONLY TIME THIS SHOULD BE DONE).

WHEN STARTED, RELEASE THE BOOSTER AND SIGNAL TO OBSERVER TO STOP TOWING—

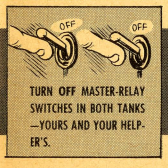
TAKE IT EASY OR YOU'LL CLIMB PIGGY-BACK ON THE TOWING TANK.

SLAVE CABLE STARTIN'

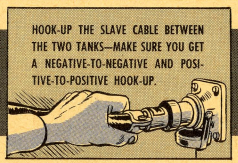




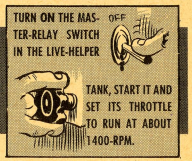
GET A LIVE-HELPER TANK.



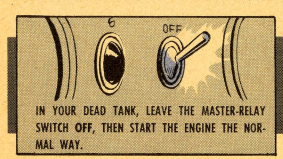
TURN **OFF** MASTER-RELAY SWITCHES IN BOTH TANKS—YOURS AND YOUR HELPER'S.



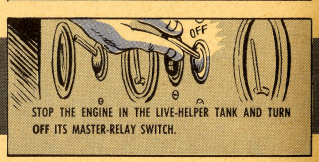
HOOK-UP THE SLAVE CABLE BETWEEN THE TWO TANKS—MAKE SURE YOU GET A NEGATIVE-TO-NEGATIVE AND POSITIVE-TO-POSITIVE HOOK-UP.



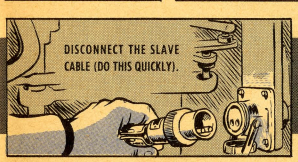
TURN **ON** THE MASTER-RELAY SWITCH IN THE LIVE-HELPER TANK, START IT AND SET ITS THROTTLE TO RUN AT ABOUT 1400-RPM.



IN YOUR DEAD TANK, LEAVE THE MASTER-RELAY SWITCH **OFF**, THEN START THE ENGINE THE NORMAL WAY.



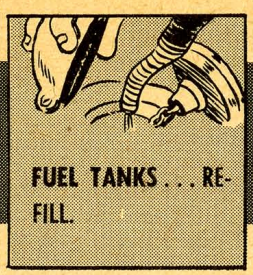
STOP THE ENGINE IN THE LIVE-HELPER TANK AND TURN **OFF** ITS MASTER-RELAY SWITCH.



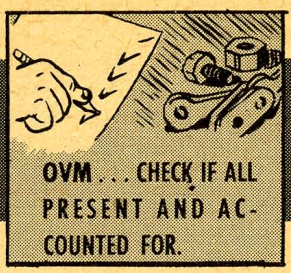
DISCONNECT THE SLAVE CABLE (DO THIS QUICKLY).

FLIP **ON** THE MASTER-RELAY SWITCH IN THE TANK THAT WAS DEAD. RUN IT AWHILE TO CHARGE THE BATTERIES.

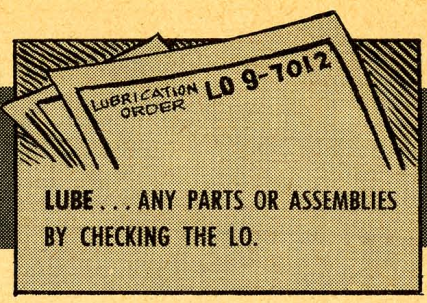
LEAKS...INSPECT FOR POSSIBLE ENGINE OIL, HYDRAULIC OIL OR GAS LEAKS.



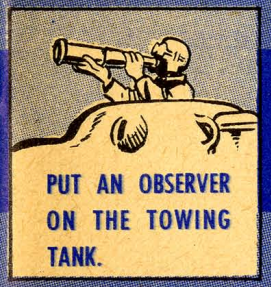
FUEL TANKS... REFILL.



OVM... CHECK IF ALL PRESENT AND ACCOUNTED FOR.

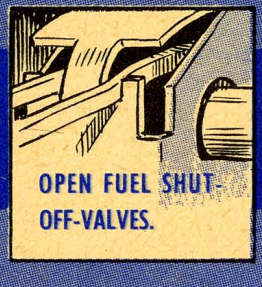


LUBE... ANY PARTS OR ASSEMBLIES BY CHECKING THE LO.



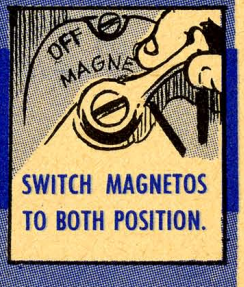
PUT AN OBSERVER ON THE TOWING TANK.

RELEASE PARKING BRAKE.

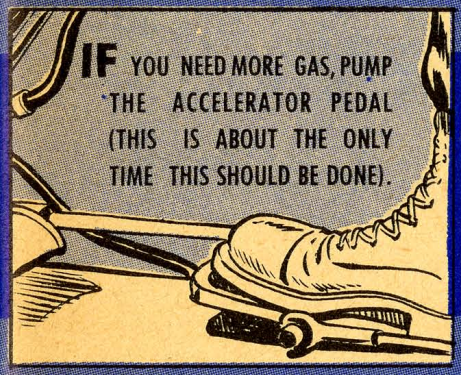


OPEN FUEL SHUT-OFF-VALVES.

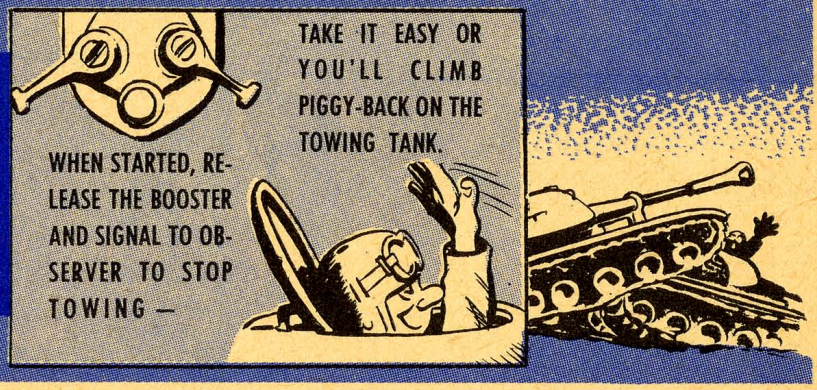
TURN ON MASTER-RELAY SWITCH.



SWITCH MAGNETOS TO BOTH POSITION.

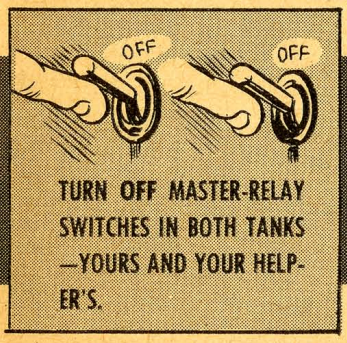


IF YOU NEED MORE GAS, PUMP THE ACCELERATOR PEDAL (THIS IS ABOUT THE ONLY TIME THIS SHOULD BE DONE).

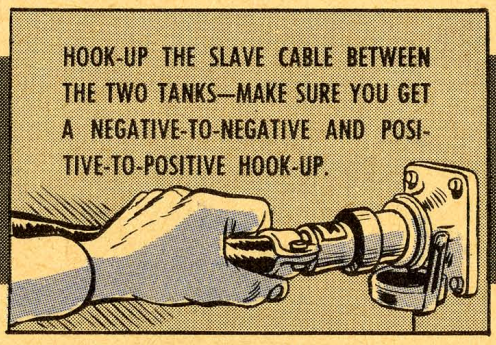


WHEN STARTED, RELEASE THE BOOSTER AND SIGNAL TO OBSERVER TO STOP TOWING —

TAKE IT EASY OR YOU'LL CLIMB PIGGY-BACK ON THE TOWING TANK.

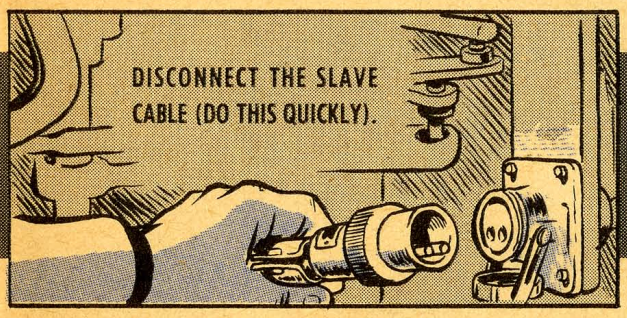


TURN OFF MASTER-RELAY SWITCHES IN BOTH TANKS —YOURS AND YOUR HELPER'S.

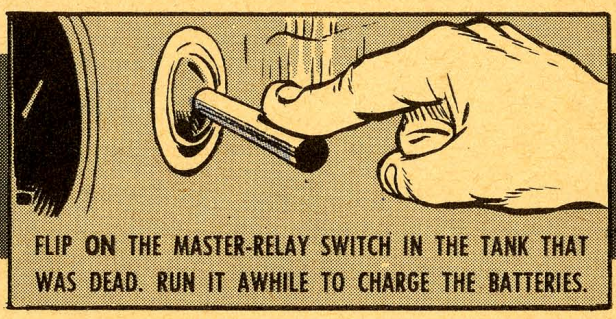


HOOK-UP THE SLAVE CABLE BETWEEN THE TWO TANKS—MAKE SURE YOU GET A NEGATIVE-TO-NEGATIVE AND POSITIVE-TO-POSITIVE HOOK-UP.

TURN ON THE MASTER-RELAY SWITCH IN THE LIVE-HELPER TANK, START IT AND SET ITS THROTTLE TO RUN AT ABOUT 1400-RPM.

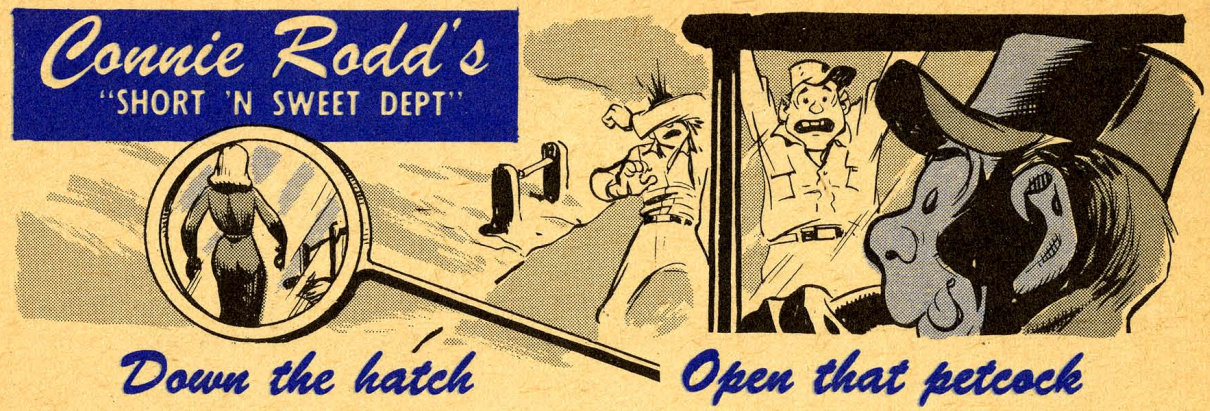


DISCONNECT THE SLAVE CABLE (DO THIS QUICKLY).



FLIP ON THE MASTER-RELAY SWITCH IN THE TANK THAT WAS DEAD. RUN IT AWHILE TO CHARGE THE BATTERIES.

Connie Rodd's "SHORT 'N SWEET DEPT"



Down the hatch

Alcohol and gasoline **will** work together—as long as they're in your truck's tank and not yours.

So what? So your chug-buggy might need a snort.

When Old Man Winter sends temperatures below 32° F, any water condensation that snuck into your fuel tank turns solid. And ice in your tank, fuel pump and gas lines can freeze you in your tracks.

But if you add 1 pint of alcohol to every 10 gallons of gasoline you put in the tank, it'll mix with the water, lowering its freezing point. Pour that much in every time you get fuel and it'll have to be mighty cold to stop you.

When you requisition the stuff, ask for Alcohol, denatured, 1 gal, OA-396, grade No. 3, process SD2B, Ord Stock No. 51-A-1932. And if anybody asks you why, quote para 38 of TM 9-850 (Oct 51) as your authority.

This shouldn't stop you draining out your fuel tank every six months, tho'. Besides getting rid of water, there's other muck that gathers at its bottom. Dirt in the fuel can clog and claw you into major repairs. So-o-o-o-o, give it a snort when the weather's low—and drain it on time, too.

Open that petcock

Brakes aren't the only things that suffer when you fail to drain your air tanks. During cold spells the horns in your 2-1/2-ton trucks can freeze and won't blow.

It's caused by ice from moisture condensing in the air lines that lead into the solenoid.

Draining the air reservoir tanks when you're thru with the trucks will prevent this from happening. Leave the petcocks open until morning (Fig 1), and let all the moisture drain out. There's not much chance of forgetting to close them with that alarm buzzer in the cab that warns you when your air pressure is low.

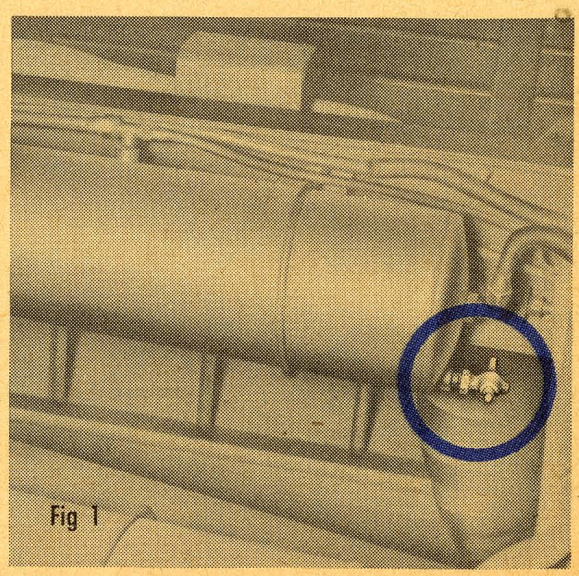


Fig 1

Here's a greasy one...

Lo, and behold—here's a new one on good ol' GAA (Grease, Automotive and Artillery) but it's a slick'un and you'll hafta look real careful.

The GAA you've been using for some time has been used nearly every place except for certain spots on vehicles that go fording. (Those wet spots take WB right now.) This "old stuff" GAA is identified in the books as GAA Amendment **1.**

Now you can get a new and better all-round grease, a "super" GAA. It'll be identified as GAA Amendment **2.** And it's to be used in **everything.**

If you want to see at a glance just how to deal with this grease situation if you can't get the new super GAA take a gander at this chart—

	WHEN	WHERE	
		Every place GAA is called for USE THIS **EXCEPT....**	Wheel Bearings, Bogies and CV Joints on vehicles that go fording* USE THIS
1	If you can't get "Super" GAA, (Amend. 2), use—	"Old Stuff" GAA (Amend. 1)	WB General Purpose Grease No. 2, clean out all GAA because WB and GAA don't mix.
2	As soon as you can get "SUPER" GAA (Amend. 2)	"Old Stuff" GAA (Amend. 1) (Keep using it up in these spots until it's all gone.)	Clean out all WB and switch to New "Super" GAA (Amend. 2)
3	After all "Old Stuff" GAA (Amend. 1) is used up	New "Super" GAA (Amend. 2)	New "Super" GAA (Amend. 2)

**If you got a new vehicle from the depot chances are you're all set—they're now coming thru with Super GAA Amend. 2.*

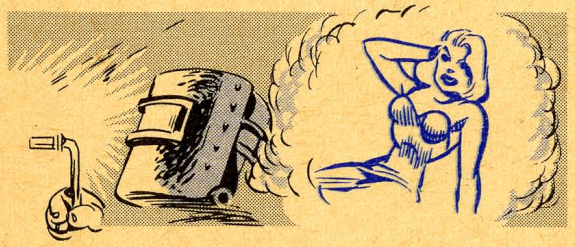
If you're looking for the official numbers on this new stuff, look no more. Here they are:

Mil-G-10924—GAA Amendment 2

Size of Can	Federal Stock No.	Ord Stock No.	Quartermaster Stock No.
4 ounces	9150-190-0903	14-G-622-415	14-G-00622-415
1 pound	9150-190-0904	14-G-623-5	14-G-00623-005
5 pounds	9150-190-0905	14-G-623-30	14-G-00623-030
25 pounds	9150-190-0906	14-G-623-55	14-G-00623-055
35 pounds	9150-190-0907	14-G-623-80	14-G-00623-080
100 pounds	9150-190-0908	14-G-623-105	14-G-00623-105

Welder's delight

Here's something that'll give your 1/4-ton truck a real spark. It's the electric arc welder, Valentine Welder & Mfg Co., Model 2080, Ord Stock No. 17-W-1756, that was so popular back in World War II.



This welder is a power-takeoff attachment for the Jeep's engine—and together they make a welder's dream come true.

Ord 7-8 SNL J-481 is your in on one for the old World War II Jeep.

But to rig it up on your M38 or M38A1, 1/4-tonner, you'll need a kit to make it work. For the M38 ask for: Kit, modification, Valentine Welder & Mfg Co., No. 380, Ord Stock No. 17-K-527-100. And for the 'A1, ask for: Kit, modification, Valentine Welder & Mfg Co., No. 381, Ord Stock No. 17-K-527-110.

With welder 17-W-1756, a kit and your Jeep—you'll soon have an electric welder that'll make molehills out of mountains.

How much oil?

Your Jeep's crankcase will take just so much oil. If you give it more than it needs, you'll only be wasting the overdose. That's why you want to clear up the mystery about how much to pour into its crankcase.

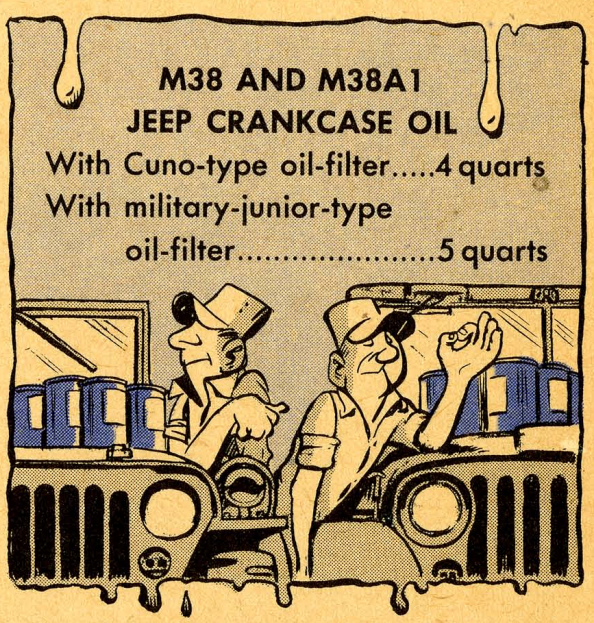
The confusion is that the M38 dash's service-data-plate and LO 9-804 list the crankcase capacity as 5 quarts—but the lube chart in TM 9-804, page 40, says it's only 4 quarts.

On top of all that, the oil-filter shown on page 44 of TM 9-804 is the military-junior cartridge type. But what you'll find in the vehicle is the Cuno type. It was planned to use the military-junior but that changed to the Cuno at the start of production of the M38.

The fact is this: With the Cuno filter, the M38 takes 4 quarts of oil.

The M38A1's got its problems too. That Jeep's service-data-plate says its crankcase capacity is 4.5 quarts. But TM 9-804A, page 44, says it's 5 quarts. Unlike the '38, the 'A1 began its career with the Cuno filter and changed to the cartridge type, after a couple of thousand were made.

Here it is in brief:



Remember that Note 2 of LO 9-804 and LO 9-804A says to drain crankcase and refill to FULL mark of the gage.

HERE'S A LIST OF ADDITIONAL OFFICIAL PUBLICATIONS ON ORDNANCE EQUIPMENT WHICH ARE OF INTEREST TO A LOT OF YOU.

TM'S

TM 9-6135, Periscope T38, Jun 54

TM 9-7009-6, Cross-drive Trans CD-850-4, -4A, Jun 54

TM 9-7419-1, Steer-shift controls univ joints, final drives for tracked arm inf veh M75 (T18E1), Jun 54

TM 9-8623, Axles and transfers, Apr 54

TM 9-9018-2, 3/8-in portable electric drill (US Electrical Tool Model 38HD with stand) (40-D-344), Jun 54

TM 9-9021-4, 1/2-in portable electric drill (The Bradford Machine Tool Model No. 10) (40-D-355), Jun 54

TM 9-9090-2 (TO 17-5BFA-16), 7-in disk port elec sander (US Electrical Tool Model HSHD7) (40-S-28), Jun 54

SNL'S

Ord 7 SNL A-70, Mortar, 4.2-in, M2; cart, Jun 54

Ord 8 SNL A-91 (TO 39A-5BA-38), Gun, auto, cal. .60, T130E3; 20-mm, T160E3; cal. .60, M38 (T130E4); 20-mm, M39 (T160E4), M39A1, Jun 54

Ord 8 SNL D-63, How, 155-mm, M45 (T186E1), Jun 54

Ord 7 SNL D-66, Trailer, 762-mm rocket, XM329, Jun 54

Ord 9 SNL F-262, 'Scope, elbow, M62, M62A1C, M62E2, Jun 54

Ord 9 SNL F-274 (Vol 2), Amplifier, M1A2; Drive, motor, M2A2, Jun 54

Ord 8 SNL F-288, Setter, fuze, M19, M19A1, Jun 54

Ord 7 SNL F-329, Table, graphical firing, M39A1, M40A1, M41A1, M42, M43A1, M44A1, M45A1, M46, M47A1, M48, M49, M50 and M51A1, Jun 54

Ord 7 SNL F-351, Table, graphical site, M52, M53A1, M54, M55, M56, Jun 54

Ord 8 SNL F-362, Sight, bore, T150, Jun 54

Ord 8 SNL F-371 (TO 38-1-13), Mount, 'scope, M96 (T189), Jun 54

Ord 8 SNL F-382 (TO 38-I-12), 'Scope, M93 (T153), Jun 54

Ord 9 SNL G-755, Semitrailer, gas tank 12-ton 4-wh M131, May 54

Ord 8 SNL G-758, Truck, ambu, front line 1/4-ton, 4x4, M170; Truck, util, 1/4-ton, 4x4, M38A1, May 54

Ord 8 SNL J-12, Special tools for small arms and auto wpns (SNL Groups A, B), Jun 54

Ord 6 SNL J-16 (Sec 48), Tool sets, fld and dep maint for hull and suspension used in: M46, M46A1, M47, M48, T43E1, T97, T108, T51, Jun 54

Ord 7-8 SNL J-17 (Vol 2), Common hand tools, May 54

Ord 7-8 SNL J-132 (TO 17-5BJB-30), Drill, elec, port, 3/4-in (Black & Decker), Jun 54

Ord 7-8 SNL J-719 (TO 17-5AB-120), Cleaner, abrasive blast, heavy endless rubber conveyor tumbler (Pangborn, Model 6GN) (40-C-1007-600), Jun 54

Ord 7-8 SNL J-735, Gun, metal spray, air oprt, oxy-acetv fired (Metallizing Engineering Model 4E) (40-G-513-75), Jun 54

Ord 7-8 SNL J-736, Gun, lubr, air opr, high press, 25-50 lb cap, w/3/8-in id 10-ft hose assy (Lincoln Engineering Model 102326A) (40-G-503), Jun 54

Ord 9 SNL L-1, Sml Arm Tgts, Tgt Equip, Jun 54

TB'S

9-8832-1, 5-pass 4x2 lt pers carrier (Chevt Series 1500-1949-50-51): Oil filtr mntg plate, Jun 54

Ord 561, Continental eng models AOS-895-3, AO-895-4, AV-1790-5B and AV-1790-7: Ignit timing, Jun 54

Ord 563, 90-mm ammo assem w/fired resized cart cases: Appnce, servibIty, Jun 54

Ord 565, Flash, reducer, M1: Chge in auth use, firing chrge, propel, M19 in gun, 155-mm, M2, Jun 54

ORDNANCE MWO'S

D48-W3, 75-mm AA gun mnt T69: Modify, relocate recep bx brkt, axle rear bogie assy, Jun 54

F350-W3, FCS T38: Apply fld chge No. 8 to pwr cntrl T21E1, serial numbers 1, 3, 4, 6-13, 15-20, 22-76, 82, permit opr view az gun dials, Jun 54

G244-W8, M46 tank: Replace brk cam bx assy, Jun 54

G262-W11, M47 tank: Alter cal. .50 MG cradle, receive cal. .30 gun, etc, Jun 54

G262-W18, M47 tank: Install of peris protect gds, Jun 54

MISCELLANEOUS

FT 81-AG-1 (Abrdg), Mortar, 81-mm, M29, M1 on mnts, mortar, 81-mm, M23A2, M23A1, M23, M4, M1, firing Shell, HE, M43A1, M43A1B1; Shell, TP, M43A1, M43A1B1 w/fuze, PD, M52A2B1; Fin, M3; Cart, ignit, M8; Prim, percus, M34; Incre, propell M1A1, Apr 54

FT 81-AH-1 (Abrdg), Mortar, 81-mm, M29, M1 on mnts, mortar 81-mm, M23A2, M23A1, M23, M4, M1 firing Shell, HE, M43A1 and M43A1B1; Shell, TP, M43A1 and M43A1B1 w/fuze, PD, M52B10; Fin, M3; Cart ignit, M8; Prim, percus, M34; Incre, propell M1A1, Apr 54

LO 9-7002, Inf veh, arm, M59 (T59), May 54

Ord 5-4-7, Cross ref list, No. 1869402, 6704182, Apr 54

SB 9-98-24 (TO 19-75A-111), Mil tact trans veh, defic in warranty pd, Jun 54

SB 9-110, Natnl avail, new adptd ord item, Jun 54

Truck cleaners

Here are the numbers on janitor tools for cleaning up your truck. Now, you can get 'em and use 'em.

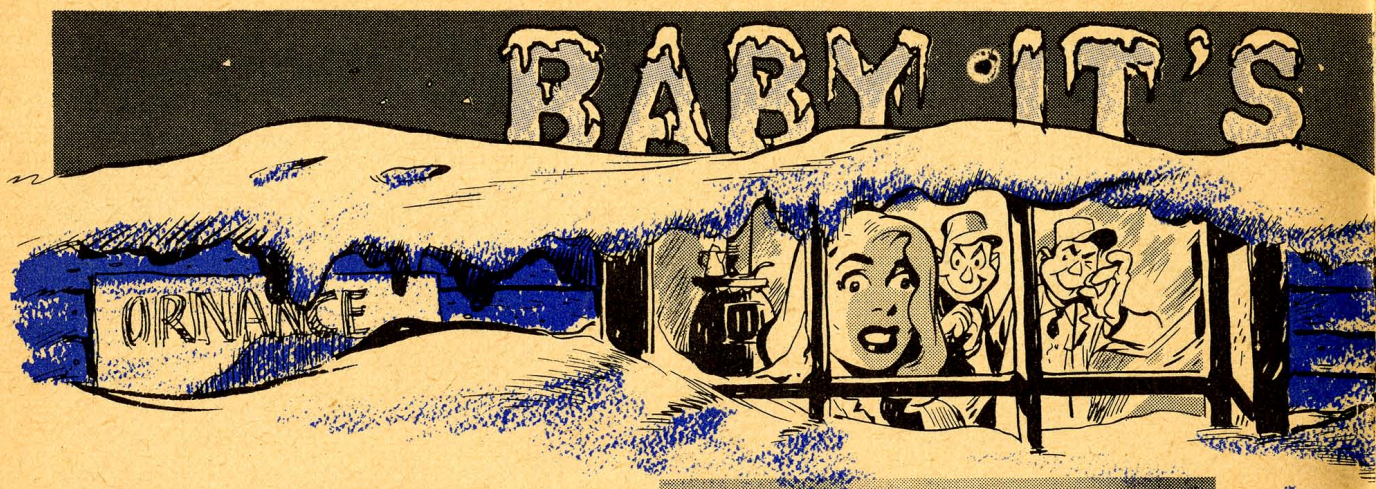
Brush, cleaning, chassis, 5-inch wide, 21-3/4-inch long, Eng Stock No. 38-3563.200.217.

Brush, cleaning, engine, hatchet style, 5/8 x 3-3/8 x 2-1/2-inch brush part 20 inches long, Eng Stock No. 38-3563.460.200.

Sponge, synthetic, vinyl type, compressed, Ord Stock No. 41-S-4047-555.

Send the forms

Whenever you send a vehicle to Ordnance for repair, be sure to send along the Record Jacket, DA Form 478. And be sure that any DA Form 9-68's and the latest DA Form 461 or 462 go with it. Checking these forms will not only clear the gig sheet—it'll help Ordnance make sure that all troubles are corrected.



PLEASE—DON'T—STOP

If your 2-1/2-ton truck idles too fast, check your carburetor.

The throttle of some Holley carburetors (Model 885-FFG) won't close all the way when the accelerator pump link is in its winter or outer position. The link hits the carburetor body's bottom before finishing its full sweep. And with that as the set-up, you'll get a fast idle and might not get the mixture you need when it's cold outside.

For an emergency fix, move the linkage to the normal (center lever hole) or summer position (lever's hole closest to the throttle shaft)—but you can't depend on it in the real cold.

For a permanent cure try this: If the throttle plates are straight and in line, file some metal off the top of the linkage. And if that's not enough, scrape a little indentation in the carburetor body where the link hits it (Fig 1). Scrape only enough to clear the linkage, but

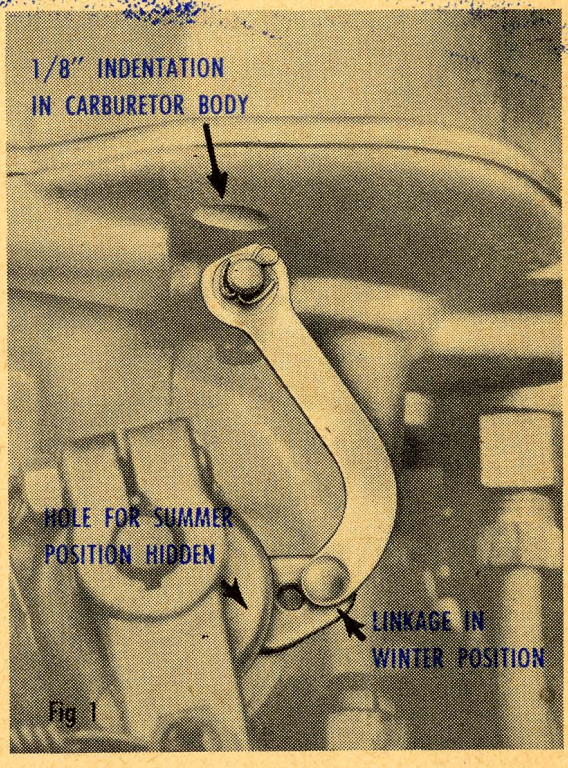
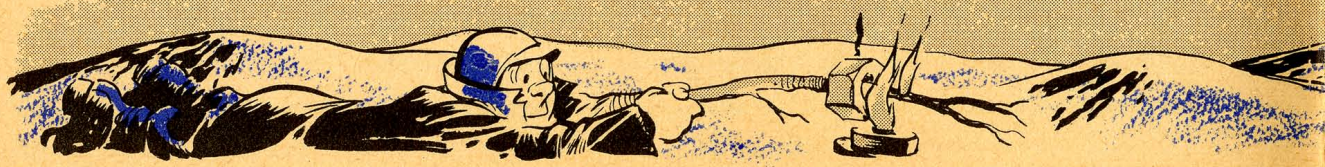
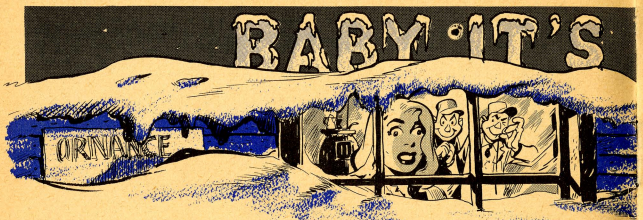


Fig 1

no more than 1/8-inch—or you may put a hole all the way through the carburetor.

On some you'll find this spot-facing operation spotted before you get it. The Holley's latest models have a cut-away at this point, and full clearance is a sure bet with no filing necessary.





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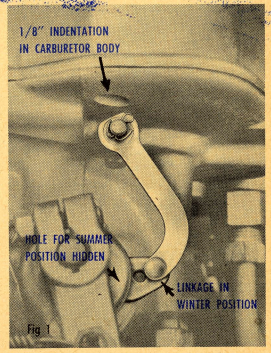

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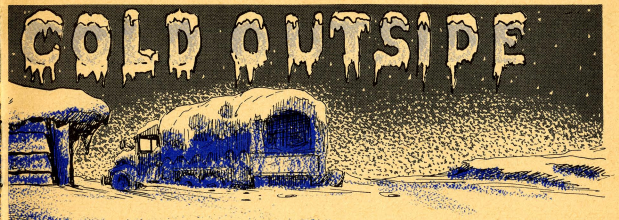


WARM 'ER UP

Before your engine is revved up to a high RPM, or made to pull a heavy load, all the hundred or so close-fitting friction surfaces—like cylinder walls, connecting-rod bearings—should have a slick coat of engine oil.

Otherwise you'll put tiny scratches and scuff marks on those polished surfaces. This in turn will burn out your engine in practically no time.

It's especially true in cold country that a fast start can slow you down to a halt. You have little or no lubrication when you go racing a cold engine that has molasses-like oil in its crankcase.

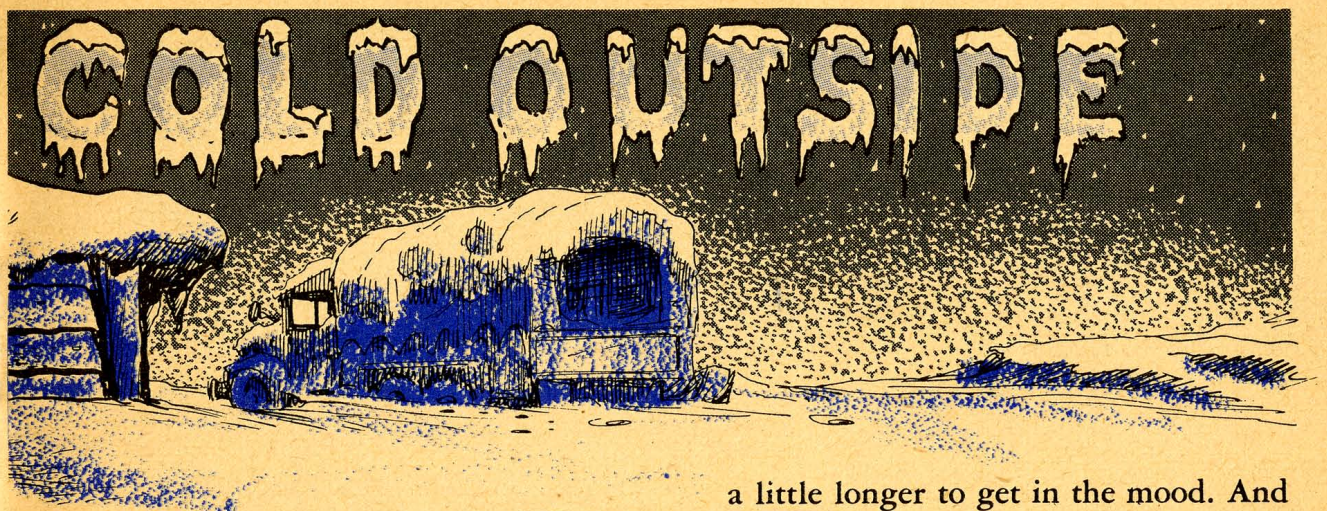
The army life of a vehicle is often made up of lots of starts and short runs, meaning lots of cold starts. So give it a little extra tenderness and warm her up before shoving off.

The men with the 2-1/2-tonners and up are the bigger warm-up gold bricks because on cold days it takes those jobs a little longer to get in the mood. And those who handle the trucks with the air brakes are the biggest. You gotta take it easy getting that buzz out of your ears. No sense in killing a good engine just because the buzzer's annoying.

Warm 'er up at a fast idle until you've got the right operating temperature (about 180° F). The right way to warm up is given in the TM—check yours to be sure. And if your engine doesn't heat up within 5 minutes or so, or overheats later—have your thermostat checked to see if it's up to snuff. It could be frozen, too.

It's tough for an engine to lube itself in cold weather starts—even with winter-grade light-weight oils. If you're trying to make time, drape your overcoat over the radiator while it's idling to cut down cold air blasts from the fan. But for gosh sakes, don't gun the engine, or leave the coat there after the temperature reaches normal.

When the engine idles and picks up



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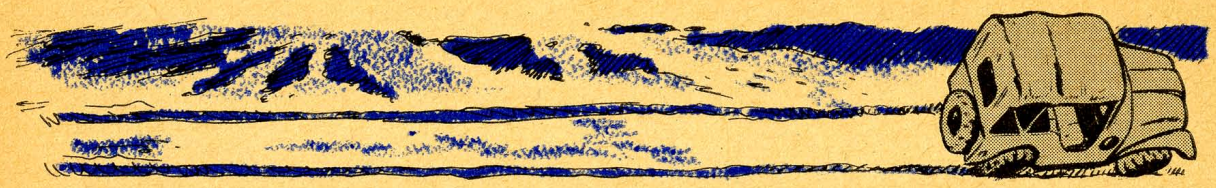
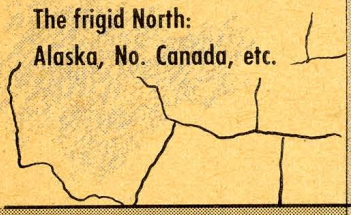
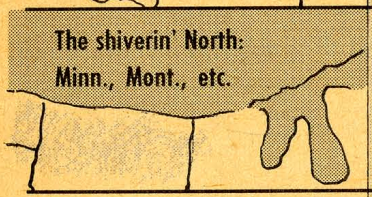
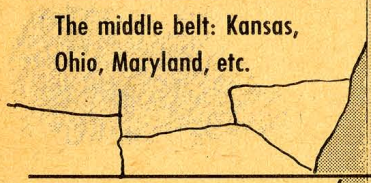
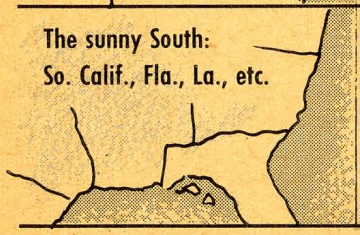


speed smoothly (with the choke lever smack-in), and the oil pressure shows normal for the temperature, after first hitting unusually high, you're ready to go. But if the oil pressure lays low after the engine's warm, shut down quick. Should a visual check not solve the problem, let a mechanic dig for the reason. Could be water and sludge freezing in the oil pump screen; that'll stop the oil pump—and that's not good.

Use the choke as little as possible. Besides the stall from a flooded carburetor, too much choking leaves liquid gasoline in the cylinder that washes away the lube from the cylinder walls. Push the choke all the way in as soon as the engine runs smoothly.

WINTER LUBES

This'll give you an idea on what lubes to use during the winter in your local climate:

For areas like:	Temperatures	Lubes to use	Remarks
The frigid North: Alaska, No. Canada, etc. 	Extreme Cold (—10° to —65° F)	OES; GOS; HBA; OHA; GAA; PL (Special)	In this clime, keep TM 9-2855 handy.
The shiverin' North: Minn., Mont., etc. 	Cold (—0° to —20° F)	OES; GOS; HBA; OHA; GAA; PL (Special)	These use the same lubes as the Arctic.
The middle belt: Kansas, Ohio, Maryland, etc. 	Normal Winter Temp. (—10° to +40° F)	OE 10; GO 75; HB; OHA; GAA; PL (Spec)	Change ahead of the cold weather.
The sunny South: So. Calif., Fla., La., etc. 	High Winter Temp. (+32° to +70° F)	OE 30 or 50; GO 90; HB; OHA; GAA; PL (Med)	You probably won't need cold lubes here.

And as for getting the lubes, dig up a copy of SB 38-5-3 (Oct 51)—it covers the lube situation pretty well, stock numbers and all.

JOE DOPE

THE MAINTENANCE SALESMAN AND THE FARMER'S DA'TTER

SEEMS THIS SALESMAN WAS ON HIS WAY TO SOME POST 'R OTHER..... IT WAS GETTIN' LATE AND COLD.

SO HE KNOCKED AT THE DOOR OF THE NEAREST FARM HOUSE...AND PARKED HIS VEHICLE NEARBY

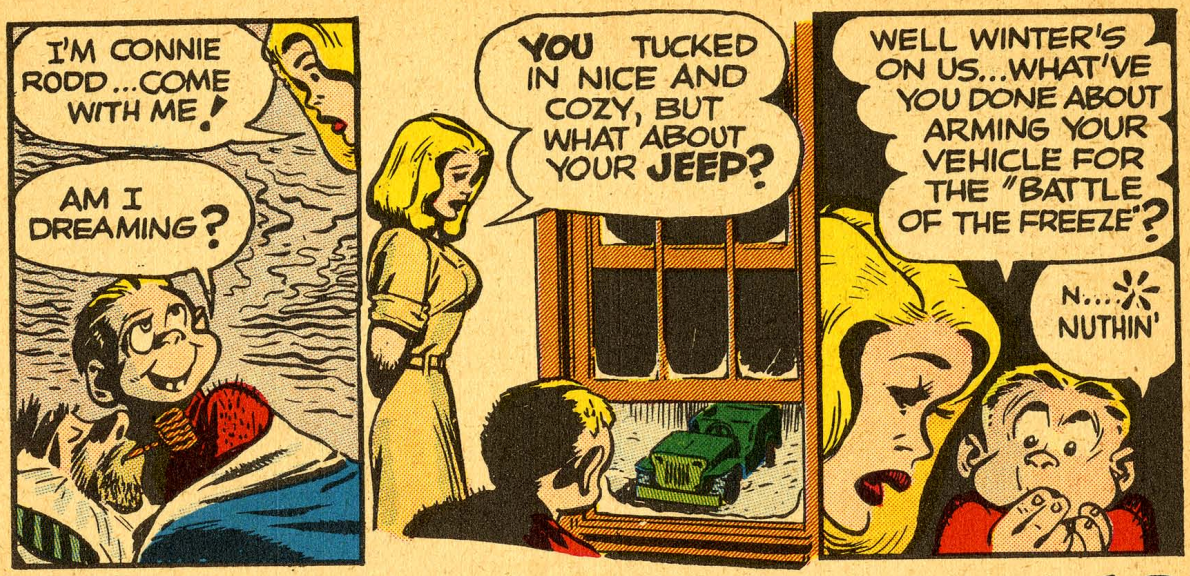
WELL SIR (chuckle) AFTER SUPPER THE FARMER SAID...

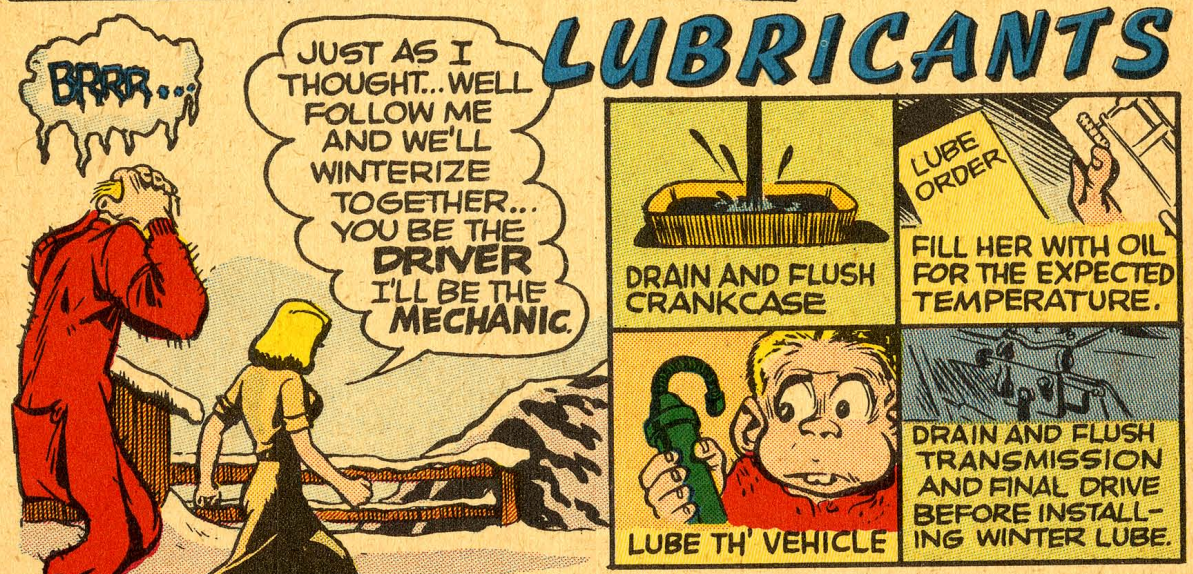
ONLY **ONE** BEDROOM IN THIS HOUSE, JOE....

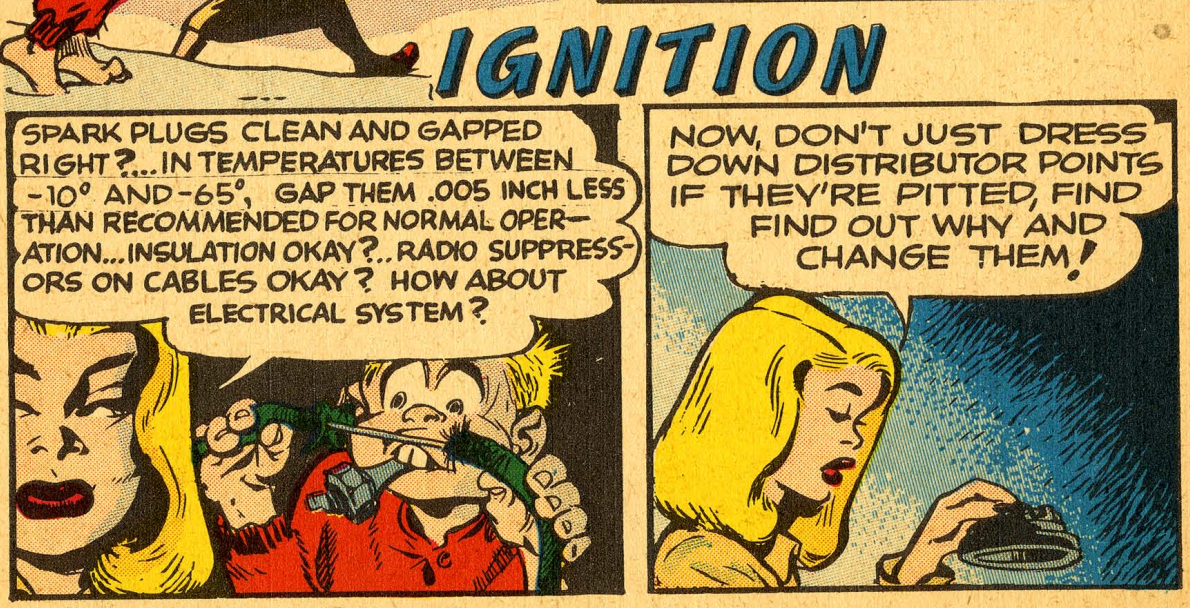
TO WHICH JOE REPLIED...

WELL :AHEM: BEGGARS CAN'T BE CHOOSERS.

SOMETIME DURING THE NIGHT...JOE WAS AWAKENED.

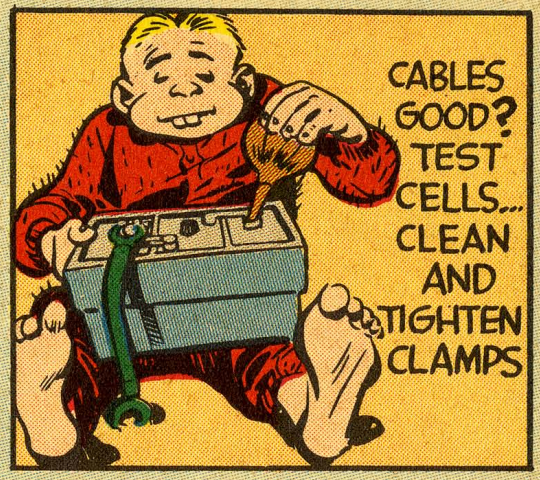

I'M CONNIE RODD...COME WITH ME!
AM I DREAMING?
YOU TUCKED IN NICE AND COZY, BUT WHAT ABOUT YOUR JEEP?
WELL WINTER'S ON US...WHAT'VE YOU DONE ABOUT ARMING YOUR VEHICLE FOR THE "BATTLE OF THE FREEZE"?
N....NUTHIN'


BRRRR...
JUST AS I THOUGHT...WELL FOLLOW ME AND WE'LL WINTERIZE TOGETHER... YOU BE THE DRIVER I'LL BE THE MECHANIC.
LUBRICANTS
DRAIN AND FLUSH CRANKCASE
LUBE ORDER
FILL HER WITH OIL FOR THE EXPECTED TEMPERATURE.
LUBE TH' VEHICLE
DRAIN AND FLUSH TRANSMISSION AND FINAL DRIVE BEFORE INSTALLING WINTER LUBE.


IGNITION
SPARK PLUGS CLEAN AND GAPPED RIGHT?...IN TEMPERATURES BETWEEN -10° AND -65°, GAP THEM .005 INCH LESS THAN RECOMMENDED FOR NORMAL OPERATION...INSULATION OKAY?..RADIO SUPPRESSORS ON CABLES OKAY? HOW ABOUT ELECTRICAL SYSTEM?
NOW, DON'T JUST DRESS DOWN DISTRIBUTOR POINTS IF THEY'RE PITTED, FIND FIND OUT WHY AND CHANGE THEM!

BATTERIES

WINTER'S MIGHTY ROUGH ON BATTERIES... MORE LIGHTS, HEATER, CRANKING...SO CHECK IT...KEEP BATTERIES FULLY CHARGED AT ALL TIMES!



COOLING SYSTEM

I'LL GET RID OF ALL THE RUST ...AND STUFF.

AFTER THE USUAL SUMMER BEAT-UP, THIS HAS GOT TO GET A REAL GOING OVER... SO LET'S NOT FORGET THOSE LOOSE BOLTS, CLAMPS, WATER PUMP, LOOSE FAN BELTS, BAD GASKETS, WORN HOSES, BAD THERMOSTAT...THEY CAUSE THE MOST TROUBLE. BE SURE WATERCOOLED COMPRESSORS ARE ALSO DRAINED BEFORE ADDING ANTIFREEZE.

NOW'S THE TIME FOR ANTIFREEZE ...WATCH FOR LEAKS

ESPECIALLY OVERCOOLING

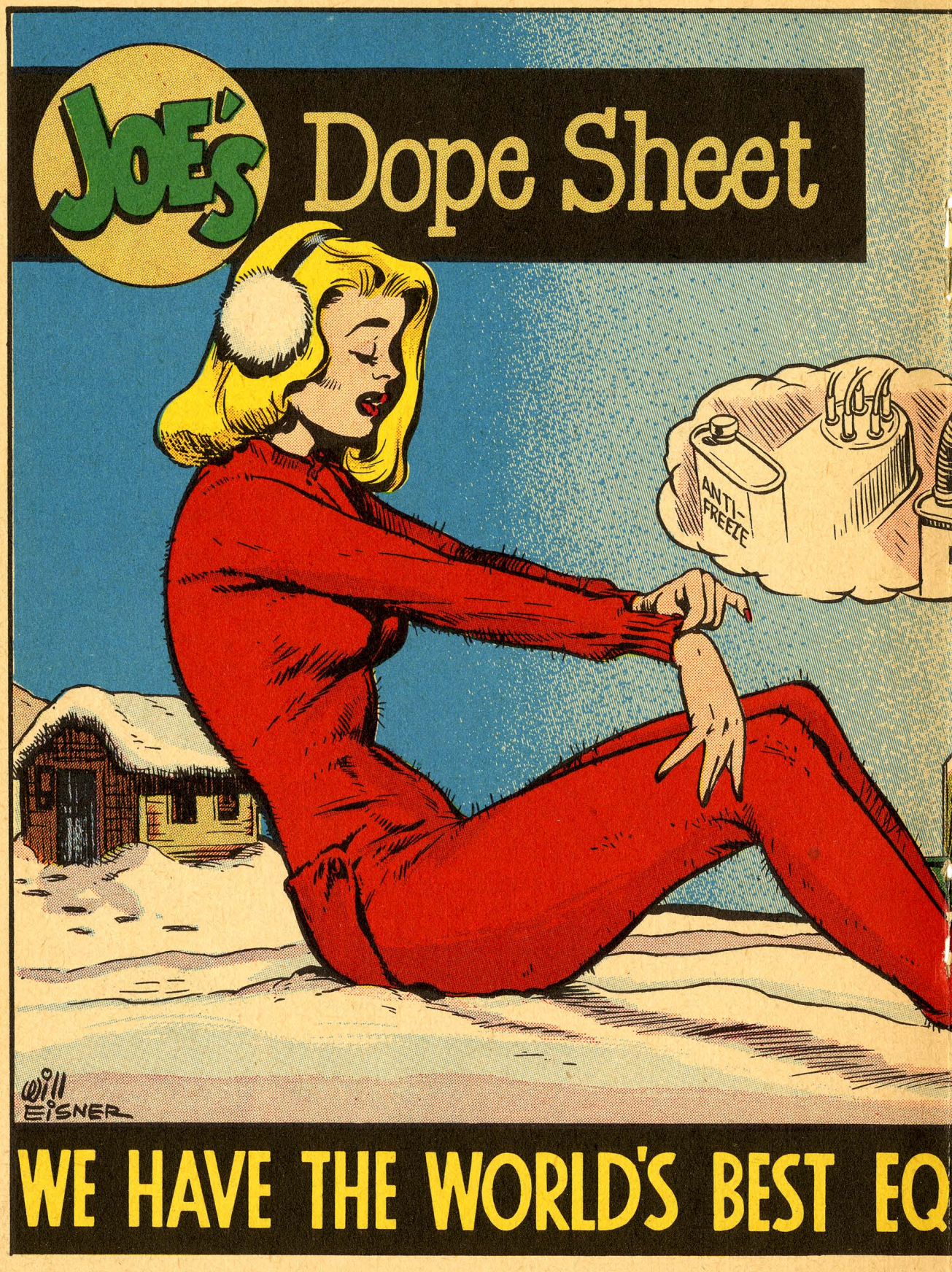
THAT'S AN ANGLE OF WINTER OPERATION MANY DON'T THINK ABOUT.

I NEVER...

MAKE SURE WATER PUMP, FAN BELT, AND THERMOSTAT ARE IN WORKING ORDER... THIS IS IMPORTANT TO PREVENT OVERCOOLING ...IT'S IMPORTANT IN VEHICLES THAT DO A LOTTA IDLING AND OPERATE UNDER LIGHT LOADS...Y'SEE THEIR ENGINES RUN AT LOWER TEMPERATURES.

RUST..... BLOCKS OPEN THERMOSTAT = LOWER ENGINE EFFICIENCY....

BY THE WAY, PASTE THIS PIN-UP IN YOUR WASHROOM



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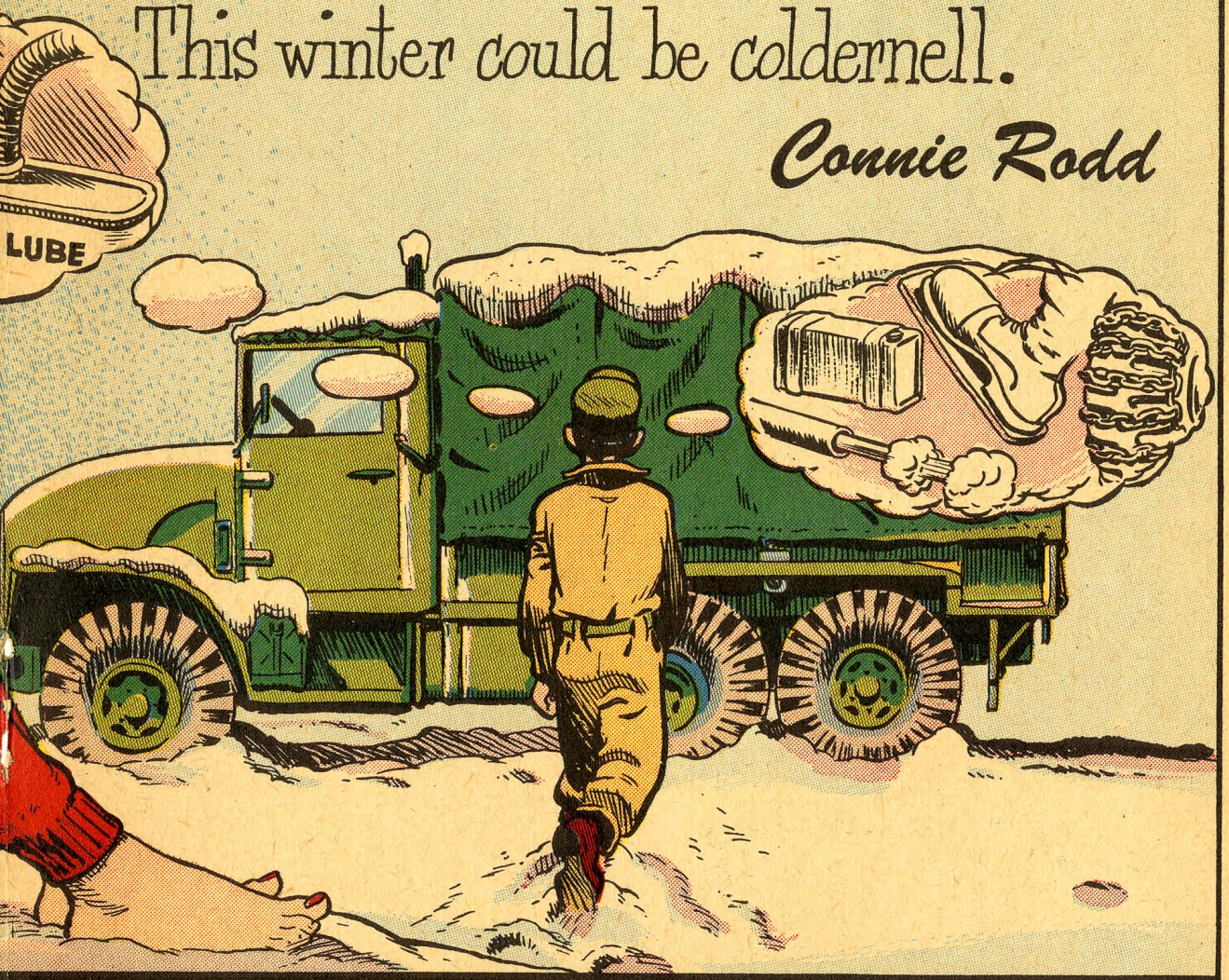
COPYRIGHT 1954 BY WILL EISNER

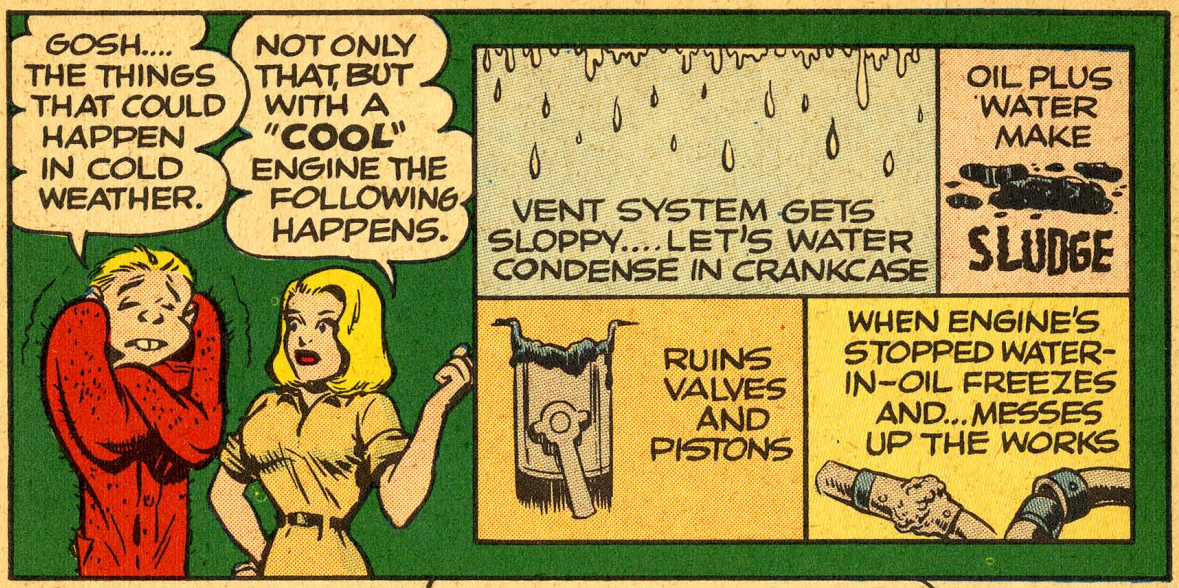
I'm donning long johns for the spell;
Do the same to your fine truck as well
Go over it, Joe
Before the first snow
This winter could be coldernell.

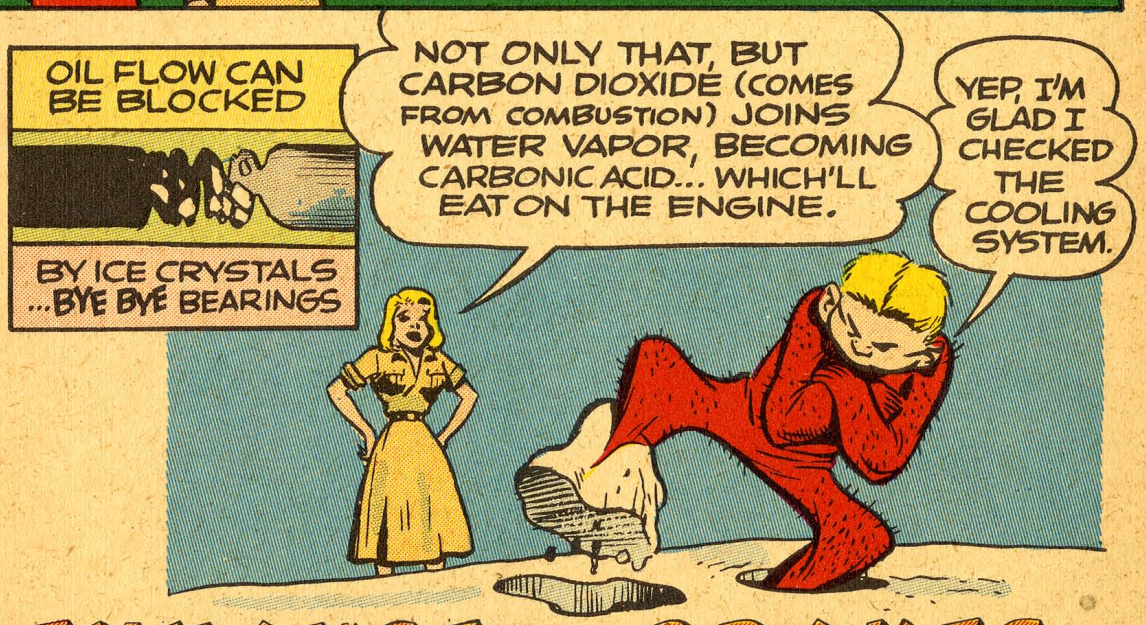
Connie Rodd



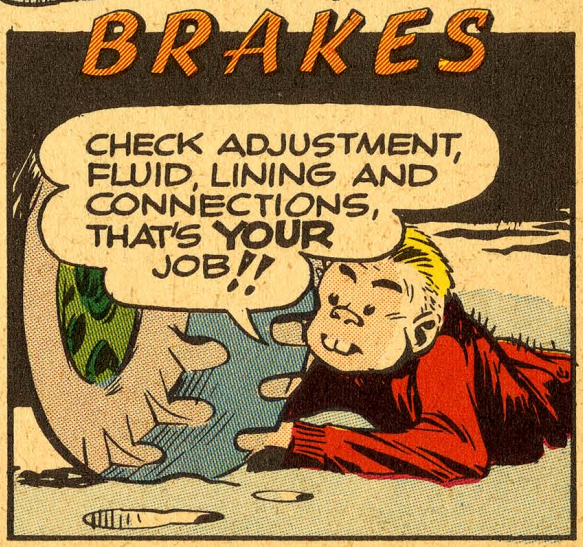
UIPMENT... Take care of it

4 BY WILL EISNER


GOSH.... THE THINGS THAT COULD HAPPEN IN COLD WEATHER.
NOT ONLY THAT, BUT WITH A "COOL" ENGINE THE FOLLOWING HAPPENS.
VENT SYSTEM GETS SLOPPY.... LET'S WATER CONDENSE IN CRANKCASE
OIL PLUS WATER MAKE SLUDGE
RUINS VALVES AND PISTONS
WHEN ENGINE'S STOPPED WATER-IN-OIL FREEZES AND... MESSES UP THE WORKS

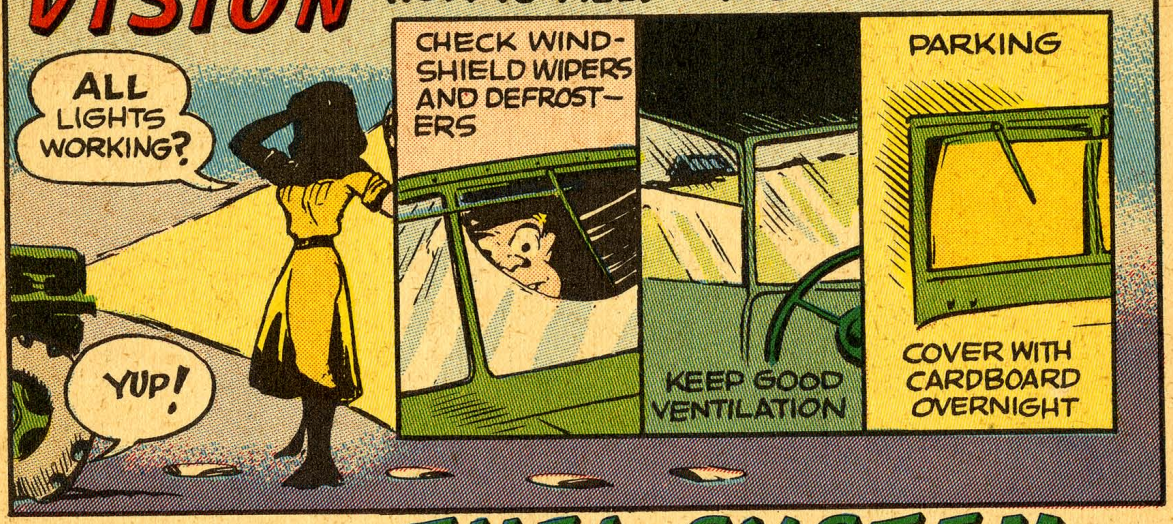

OIL FLOW CAN BE BLOCKED
BY ICE CRYSTALS ...BYE BYE BEARINGS
NOT ONLY THAT, BUT CARBON DIOXIDE (COMES FROM COMBUSTION) JOINS WATER VAPOR, BECOMING CARBONIC ACID... WHICH'LL EAT ON THE ENGINE.
YEP, I'M GLAD I CHECKED THE COOLING SYSTEM.

EXHAUST
KEEP A NOSE TWITCHIN' FOR LEAKS!!

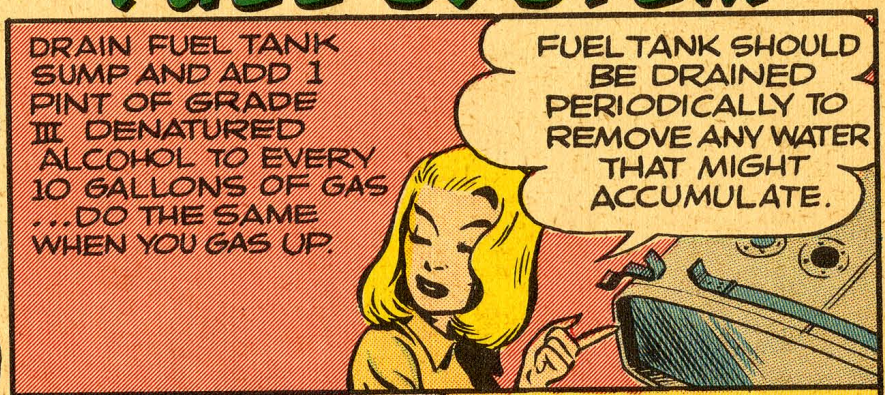

BRAKES
CHECK ADJUSTMENT, FLUID, LINING AND CONNECTIONS, THAT'S YOUR JOB!!

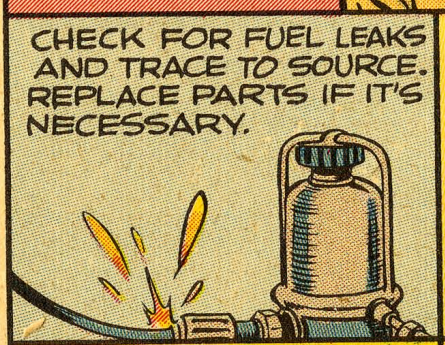
VISION

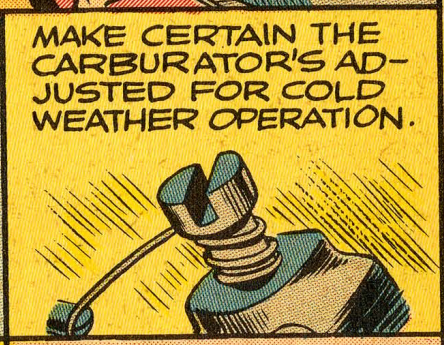
HOW TO KEEP WINDSHIELDS CLEAR

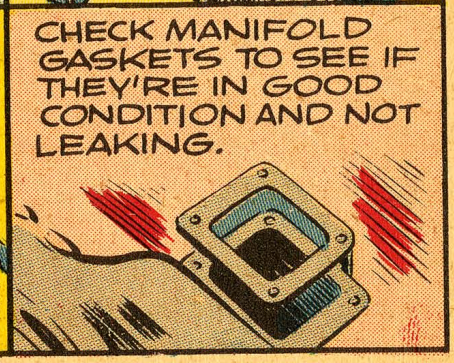


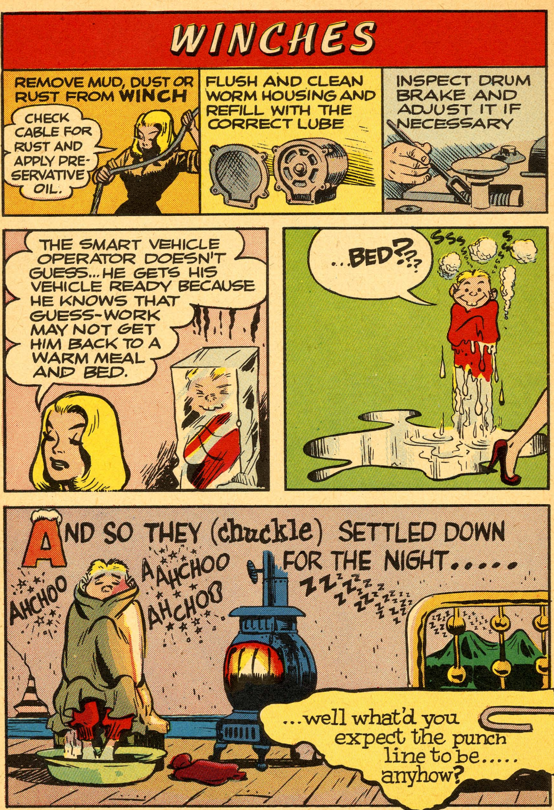
FUEL SYSTEM

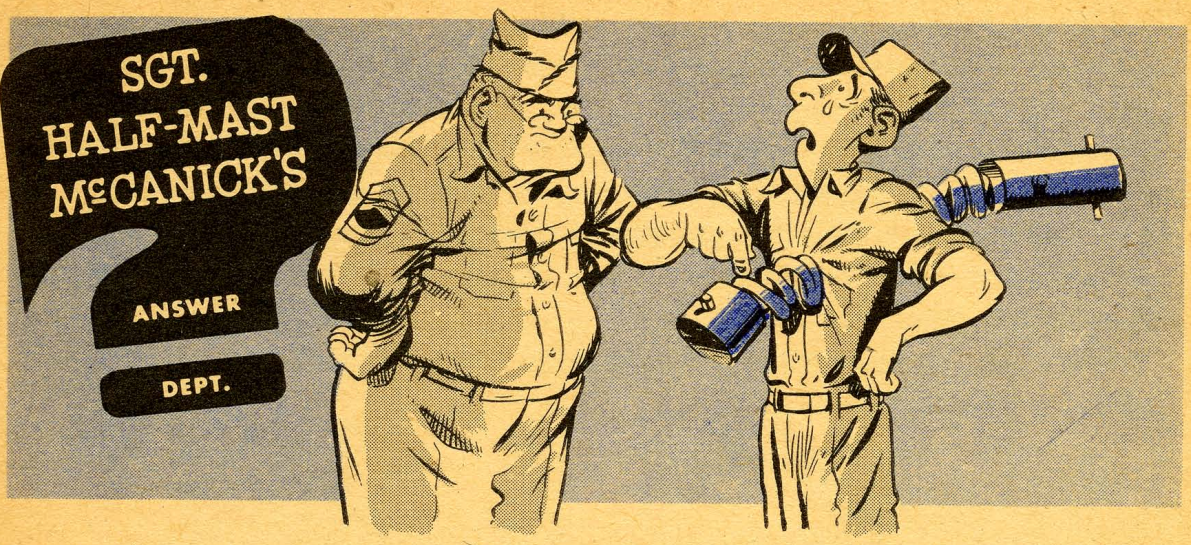









WINCHES
REMOVE MUD, DUST OR RUST FROM WINCH
CHECK CABLE FOR RUST AND APPLY PRE-SERVATIVE OIL.
FLUSH AND CLEAN WORM HOUSING AND REFILL WITH THE CORRECT LUBE
INSPECT DRUM BRAKE AND ADJUST IT IF NECESSARY
THE SMART VEHICLE OPERATOR DOESN'T GUESS...HE GETS HIS VEHICLE READY BECAUSE HE KNOWS THAT GUESS-WORK MAY NOT GET HIM BACK TO A WARM MEAL AND BED.
...BED???
AND SO THEY (chuckle) SETTLED DOWN FOR THE NIGHT.....
AHCHOO
AAHCHOO
AHCHOO
...well what'd you expect the punch line to be..... anyhow?



WHEEL-BEARING ADJUSTMENT

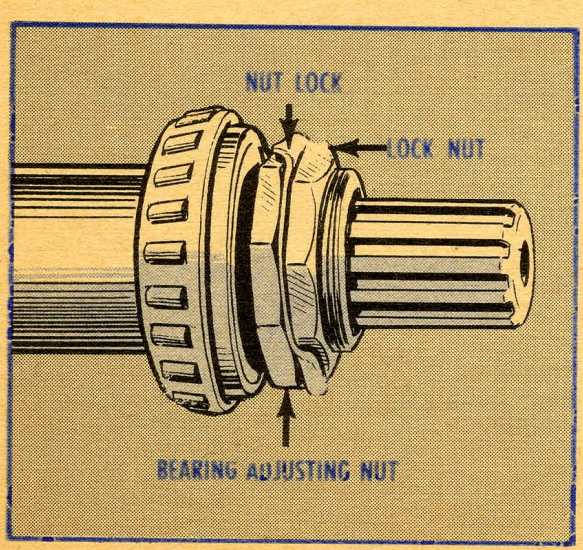
Dear Half-Mast,

We use the TM adjustment for wheel-bearings on the Jeep, the M34 and M135. We spin the wheel and tighten the wheel-bearing nut until the wheel binds. Then back the nut off about 1/6th of a turn—more if necessary—until the wheel turns freely.

When we do this the wheels become loose after several miles of ordinary driving.

What's the score?

PFC H. M.



Dear PFC H. M.,

Could be that you're not pulling the adjusting-nut up tight enough. Try pulling the nut up good and tight, then back off on the nut until the wheel turns freely. Turn the wheel to make sure the bearings are seated. Check the bearing play by grabbing the tire at the top and pulling back and forth on the tire. If you've got the adjustment right, you'll only get a slight movement of the wheel.

Those nut-locks (Fig 1) are important, too. You've got to lock the nuts just the way it tells you in the TM's. So—give 'em the once-over.

Half-Mast

ANYTHING FOR MORE LIFE

Dear Half-Mast,

Orders are orders and I'll have to change over from OE 10 to OE 30 in my GMC Hydra-Matic transmissions for temperatures above 32° F. But, why? That's all I ask. **Why?** *What good'll it do?*

Mr. L. I. G.

Dear Mr. L. I. G.,

That's a good question and you'll get a good answer.

Recent transmission tests proved that OE 30 gave the Hydra-Matic transmission a lot longer life. Any time you can find an oil that'll do that for a transmission, throw it to her. Right?

Incidentally, you'll soon see this lube change in revised LO's.

Half-Mast

THAT CRAZY COMPRESSION

Dear Half-Mast,

I guess you could call me a crazy, mixed-up kid. Here's hoping you can straighten me out. TM 9-730 sounds off that the normal cylinder compression for the AOS 895-3 engine is 125 to 145-PSI.

Then PS #14 says on page 619 that the normal compression pressure should be from 70 to 85-PSI.

And the manufacturer's representatives I've talked to say it should be 75 to 90-PSI.

Now I ask you—who's right and why?

Pvt O. L. S.

Dear Pvt O. L. S.,

Looks like you're tryin' to put the Ole Sarge behind the eight-ball. But not this time, 'cause I've got an answer for you.

The latest dope is that 75 to 90-PSI is the **normal** compression reading on that Continental engine. That reading, however, is for a new engine or one in top-notch condition. You're likely to get a reading as low as 70-PSI on engines with many hours on them, but that's **normal** for them.

As for the TM, it is being changed to show that the compression reading is 75 to 90-PSI. And that makes it official.

Half-Mast

TAKE 'EM OFF

Dear Half-Mast,

What's the final answer to the Jeep trailer-safety-chain usage?

According to information here, it's on again, off again. Please help us out.

Pvt J. H.

Dear Pvt J. H.,

There's a TB that covers this situation pretty well. It's TB 9-871A-1, (2 July 54) "Removal of Safety Chains."

It says that 1/4-ton M100 trailers equipped with revolving lunettes, are safe for operation with any 1/4-ton truck whether or not safety chains are

provided on the trailer. In fact, if your trailer's got the chains, you are to take 'em off (unless you're in a state where they're required by law).

Half-Mast

NORMAL BATTERY SPARK

Dear Half-Mast,

Why is it that when all circuits are turned off and everything else's OK, I get a weak spark when I connect the ground cable to the negative post of an M38A1's battery?

Sgt L. V. L.

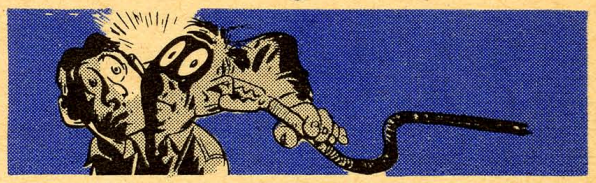
Dear Sgt L. V. L.,

Unless you know the answer to that one, it can put you to a lot of useless work trying to get it out.

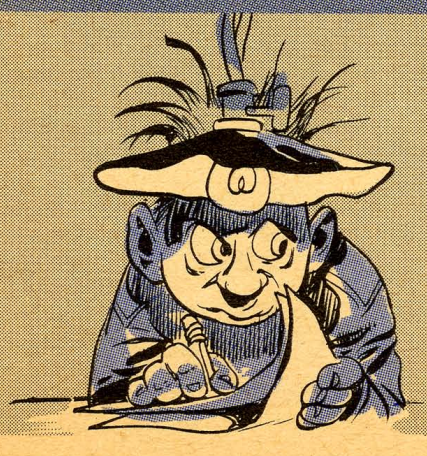
The fact is, in some vehicles a small loss of electricity is normal. It's caused by the filter condenser "charging up" in the regulator—that does it. You'll find this leak in all Jeeps and 3/4-ton trucks with the 24-volt Auto-Lite regulators. But it's got to be very small—so's not to hurt the batteries. The filter's in there for radio-noise suppression.

And here's another one. Some vehicles, especially the 2-1/2-ton 6x6 M133 series trucks, which have battery indicator Ord Stock No. G749-7412996 (the manufacturer calls it an ammeter), will give you a spark, too. This gadget is actually a low-drain voltmeter and causes a small constant drain of 30 milliamperes when hooked in the circuit. This drain by itself can discharge a 6TN battery in a four-month period and a 2HN battery in two months.

You can spot the battery indicator by its three colored segments on the dial.



But if you've more than a weak arcing, that's another story. Any leak that'd make a test light burn is your signal that you've got a short that needs fixing. And it could be anywhere in the electrical circuit—starter switch, accessories, dirty battery top, etc. That's the kind that needs tracing and digging out.



LET YOUR HAIR DOWN

Be sure to "let your hair down" when you've got something on your chest and you write to Sgt Half-Mast about it. Tell him everything—including what you and your buddies think. He won't tell a soul—not even his old lady—who or where you are. Just address it: **Sgt Half-Mast, c/o PS Magazine, Aberdeen Proving Ground, Maryland.**

ARMAMENT

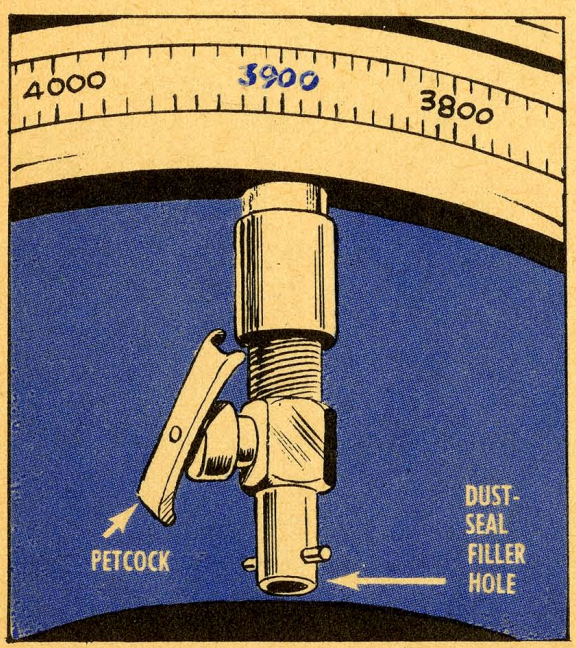
ANTIFREEZE BOWS AS GREASE TAKES

M33 fire-control gets a new

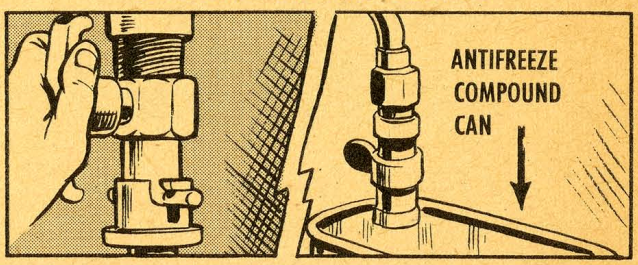
Antenna drive units on your M33 and T33 fire-control systems are getting a new dust-seal. Antifreeze is being shoved out of the picture by Mil-G-3278, Aircraft and Instrument Grease.

With grease as a dust-seal, you won't have it blowing out in high winds like the antifreeze has a habit of doing. And, you won't have to worry about grease spilling out when you're moving to another location. You just leave it in place—no draining as with antifreeze.

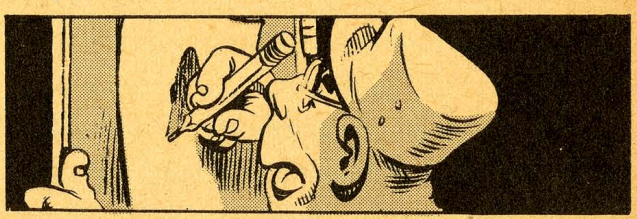
You'll find that some of the systems already have the grease dust-seal. Take a look at your drive assemblies and find just what you've got as a dust-seal. If ethylene glycol runs out when you open the antifreeze-filler petcock, here's the steps to take to get it out—and get the grease in.



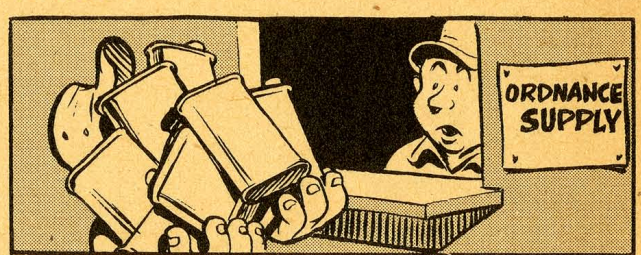
DRAIN ANTIFREEZE



Take the drain hose and antifreeze can out of the spare-parts cabinet in the maintenance and spare-parts trailer. Hook one end of the hose to the can and the other end of the hose to the petcock on the side of the antenna drive. Open the petcock and drain the antifreeze from the antenna drive. Close the petcock and take off the hose.



When you take the antifreeze out of the bin, take the listing off the cabinet door in which the bin is located.



You'll turn in this antifreeze, and any other that you have in your spare-parts trailer, to your local Ordnance supply so it can be issued to automotive outfits.

ARMAMENT

ANTIFREEZE BOWS AS GREASE TAKES OUT OVER

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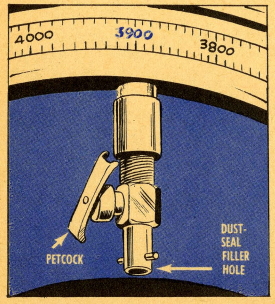

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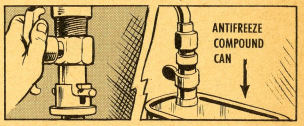

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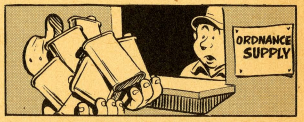

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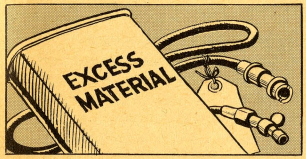
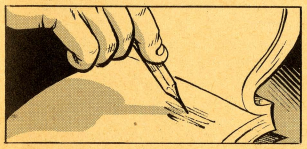


Also turn in the filler can and the filler-drain hose. Mark the cans and hose assemblies and all your shipping tickets "Excess Material—Ord 7 SNL F-342."

Scratch the listing of the can from the cabinet door of the bin where you found it. On the hose listing, you just change the number of hose assemblies allowed from two to one. The hose you'll keep is for filling the potentiometers.



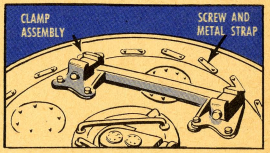
Get your Ord 7 SNL F-342 and scratch out the stock number for the antifreeze and the filler can. Knock down the quantity of hose assemblies you're authorized from two to one.

PUT IN THE GREASE

Okay, now you've got the antifreeze and its equipment out of the picture—let's get with the grease.

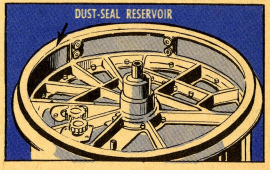
Take the M33 acquisition antenna off—or, if you're with the T33 remove the lens and lens mounting.

Remove the clamp assemblies from the antenna drive. Remove the screws and metal straps which hold down the fiber cover on the turntable assembly and take the cover off.



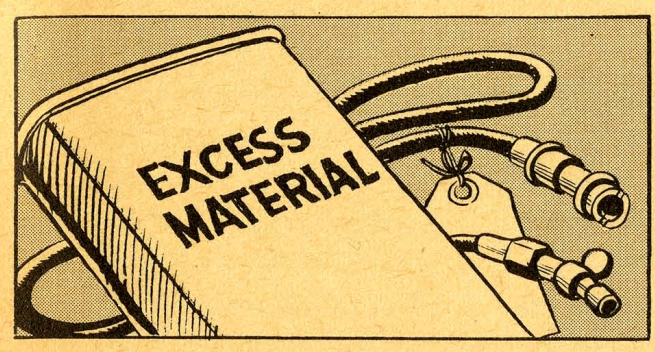
Make sure the dust-seal reservoir is clean. Fill the reservoir with Aircraft and Instrument Grease, Mil-G-3278, Ord Stock No. 14-G-611-10, to a level 1/2 inch below the top of the reservoir.

Stick the fibre cover back and install the straps and screws. Replace the clamps and



the antenna or lens mounting and lens—you're ready for the wind and free to travel without a drain job. You'll see this in TB 9-6092-3.

OUT OVER dust-seal



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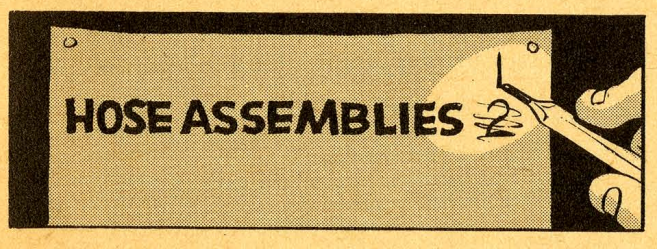

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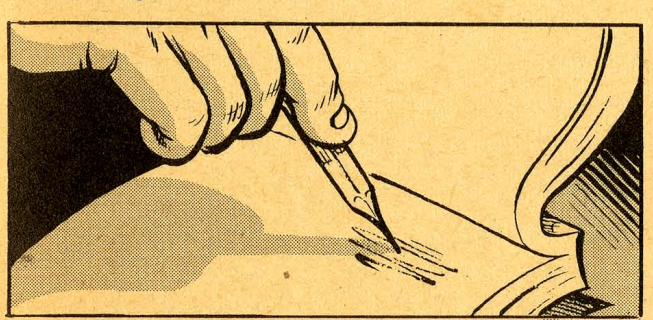

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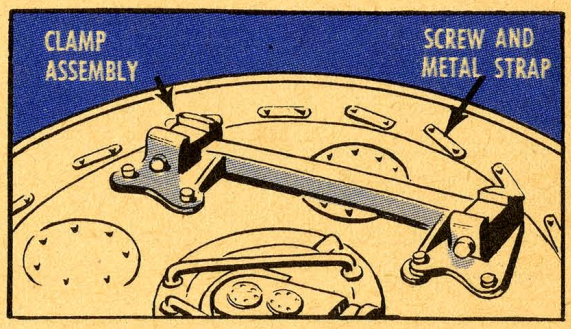

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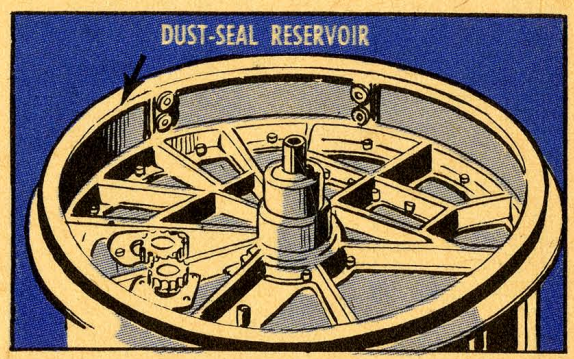


the antenna or lens mounting and lens—you're ready for the wind and free to travel without a drain job. You'll see this in TB 9-6092-3.

HERE'S A HOT ONE

You'll be inviting a hot-foot unless you clear the area behind your recoilless rifles—if you do a lot of repeated firing from one spot—like on the range.

Your recoilless rifles throw and scatter small grains of powder in back of 'em and brother, it'll burn in a flash—even on plain dirt. A butt can start it.

If you've fired a lotta rounds from the same positions, you'd better have the area checked for powder. The area can be cleared by burning with a flame thrower or by cautious, controlled burning.

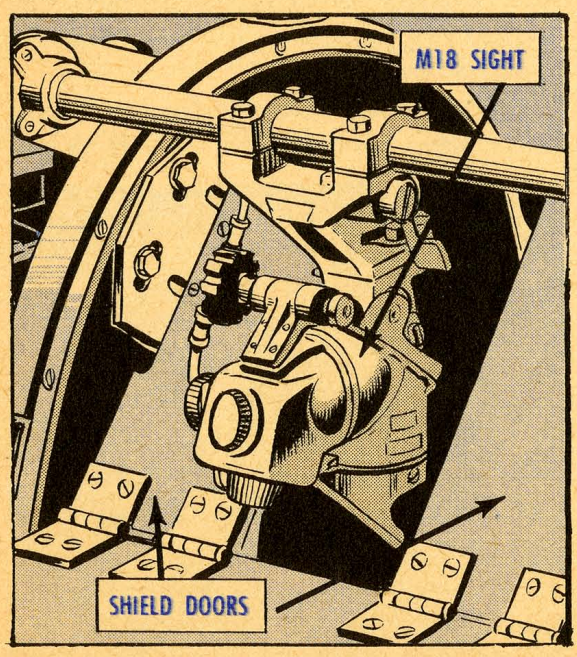
Might save a truck body or even yours this way.

DOORS RUIN SIGHTS

Shield doors on your M45 series .50-cal. multiple-machine gun mounts can bang up that M18 reflex sight if you're not careful when opening or closing them.

It's best to keep the shield door either fully opened or fully closed and make no half-way stops. And before you change the position of the doors either way, elevate the sight 90° above its horizontal position.

When you bore-sight or line your sight up with the guns, be sure you leave enough clearance between the shield door and the sight housing knob or else . . .



THE THINNER YOU WANT . . .

When you order paint supplies for the M33 fire-control system's antenna, better ask for: Thinner, synthetic enamel, Eng Stock No. 52-7895.500.010. And right now you'd better replace the thinner stock number given on page 849 of PS #18 with this new stock number.

In case you're wondering . . . you need no primer or undercoater on this paint job. The complete nomenclature of enamel for the antenna is: Enamel, synthetic, semi-gloss, air drying, olive drab, No. 2430 (1 gal) (FS TT-E-529), Eng Stock No. 52-3476.017.100.

WHEN THE TEMPERATURE DROPS—IT'S GERDOM PADS

When you're firing your 155-mm gun or howitzer, 8-inch gun or howitzer, or your 240-mm howitzer and the temperature's below minus 25° F, you gotta check that obturator gas-check pad.

If the pad's Neoprene (made with solid Neoprene rubber and uncovered) switch to the Gerdom type. The Gerdom type is made of a rubber-like compound, covered with wire mesh and asbestos.

Neoprene pads will contract in sub-zero temperatures and let gases escape

past the obturator. This, in time, will send your gun or howitzer to the graveyard.

Stick to a clean, dry cloth or soap and water when you clean either of these pads. Solvents or oil will ruin them.

GUNS NEED BALANCING

Bouncing, bouncing over the rough terrain—.

Take yourself for instance. When you're in an M41 tank that's galloping thru a cow pasture, you hold yourself balanced and steady. If you didn't, you'd find yourself bouncing around like a loose pea in a pod.

Same goes for the gun and gun mount on your M41. When you're cruising along with the gun out of the travel lock, that gun and gun mount's got to be steady and balanced. If they're not, you're going to wind up with a bunch of no-good elevating parts.

Be sure to keep all the equipment like periscope, machine gun, etc., mounted with the gun.

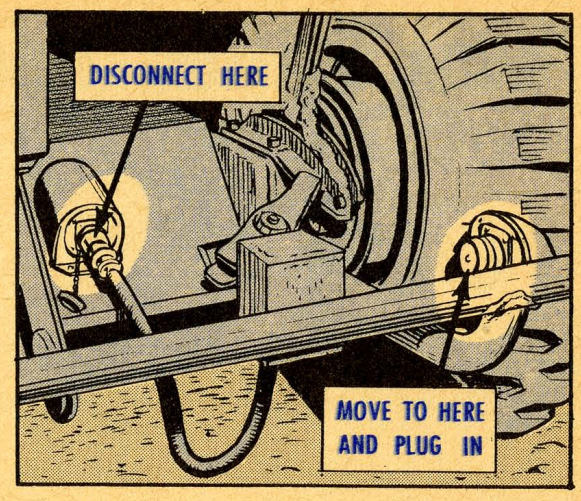
If for any reason you've added anything to or taken from the gun or gun mount, for gosh sakes, let Ordnance maintenance in on the secret.

They'll balance that gun and mount on the M41 and M41A1 to 10-to-20 foot-pounds muzzle-end heavy with a shell in the breech. Your troubles will be over—until you put or take again.

ROLL OUT THE ——

Was watching some fellas in an AAA outfit t'other day and boy did they pull it.

They were setting up a 90-mm job for firing and the big boy gave the



order to roll out the bogie. They didn't hesitate—went right to it. But were their faces red!

They forgot to disconnect the electric brake-cable that's between the bogie and the gun pedestal. As the bogie rolled away she tore the cable right out of the plug and smashed the ceramic insulator.

Don't let it happen to you—please.

NO MONKEY BUSINESS

This is not the wrench that was tossed into the works—this is the one you've been looking for if a 90-mm antiaircraft gun mount M2 is your baby.

You won't find Wrench, bogie, spindle nut (dble end tubr, oct, size of openings 3-9/32 and 3-27/32 inches, length overall 8 inches) in your Ord 7 SNL D-38. But here's how you can get it—call for it under Ord Stock No. 41-W-3727-150. This will be listed in the revised Ord 7 SNL D-38 for issue to 2nd echelon.

Your TM says you can take the wheel off and relube the wheel bearings. Use that as your authority to ask for the wrench.

SUPPLY & DIRECTIVES

NO TICKEE, NO DRIVEE . . .

YOUR NEW TRIP TICKET

HERE'S THE SCOOP ON HOW TO USE DD FORM 110

Draw up a butt can and have a seat if you happen to be a member of an outfit operating under TM 9-2810 and want to hear about the new trip ticket —the one issued 1 Dec 53.

No matter what you drive—a cement mixer, four-by-four, reefer, honey wagon or iron pony—you've still gotta have a trip ticket in this man's army. It's your authority for driving the vehicle.

So, if you gotta live with one, you might as well know what it's all about. Here are the ABC's of the ticket:

Your vehicle gets a new trip ticket each day. It's used the whole 24 hours even tho' other drivers used the vehicle before you got it.

This part's filled out by the dispatcher before you get your vehicle.

This tells what motor pool the vehicle is from.

Date vehicle is assigned to driver

Description of vehicle

Driver's name goes here.

YOU START HERE

Put your "John Henry" here.

And don't forget that ✔ if that vehicle is ready to roll.

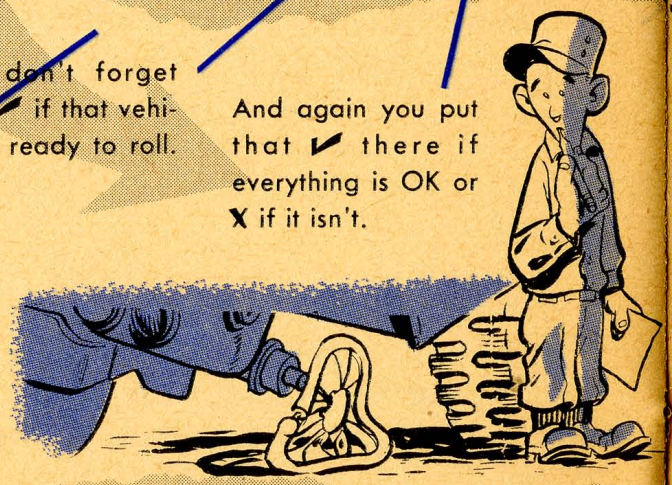
And again you put that ✔ there if everything is OK or X if it isn't.

VEHICLE AND EQUIPMENT

DATE	TYPE
31 MAR 54	TRUCK, 2½ TON, M34

DISPATCHING ORGANIZATION: 44TH TANK BN

	BEFORE OPER	DURING OPER	AFTER OPER	ACTION
1ST OPERATOR: JOHN DOE	✔	X	X	IN / OUT
OPERATOR'S SIGNATURE: John Doe				TOTAL
2D OPERATOR				IN



TOTAL

NOTE: Items checked by driver certify appropriate Maintenance Ser... certify that vehicle was dispatched and used for Official Gove...

DD FORM 1 DEC 53 110 EDITION OF 1...

TEAR OFF PORTION

PREVENTIVE MAINTENANCE SERVICES

DATE	TYPE
31 MAR 54	TRUCK, 2½ TON, M34

This had better jibe with the

SUPPLY & DIRECTIVES

NO TICKEE, NO DRIVEE . . .

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This part's filled out by the dispatcher before you get your vehicle.

This tells what motor pool the vehicle is from.

Date vehicle is assigned to driver

Description of vehicle

Registration number

Dispatcher puts in time you check vehicle out of motor pool.

This is the man who ordered the vehicle.

And this is the guy that checked you out.

This is for vehicle number. (Some places call it "bumper number.")

Driver's name goes here.

YOU START HERE

Put your "John Henry" here.

And don't forget that ✓ if that vehicle is ready to roll.

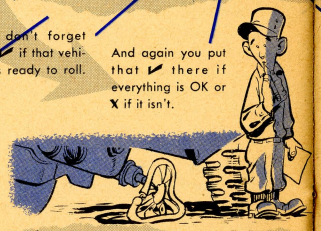
And again you put that ✓ there if everything is OK or X if it isn't.

If everything is shipshape, put another ✓. If it isn't—put an X here, an X in column that applies, and tell your troubles in space under "Remarks".

Put the speedometer miles here before you move the vehicle.

Don't forget these when you turn your vehicle back to the motor pool.

Don't forget to subtract and put that total miles there. (Now you can see why they put 'er in reverse.)



Put number of gallons of gasoline here. Be sure and list number of gallons you get each time. If you get it more than once, put it down. If you did not get any put None. Initial after each entry.

This same procedure goes for oil. Put down number of quarts added and initial. If you didn't add any write None and initial.

Don't get fancy in these spaces, 'cause the next driver might need some space too.

Now for your inspections—

Here's the kind of marks you use. Better not confuse the shop by mixing these, 'cause they believe in signs.

Motor pool xxx's out this.

This had better jibe with the info given on top of sheet.

VEHICLE AND EQUIPMENT OPERATIONAL RECORD

DATE	TYPE	REGISTRATION NO.	ADMINISTRATION NO.
31 MAR 54	TRUCK, 2½ TON, M34	41138577	115

DISPATCHING ORGANIZATION	BEFORE	DURING OPER	AFTER OPER	ACTION	TIME	MILES	TOTAL (Fuel gallons)	TOTAL (Oil quarts)
44TH TANK BN								
1ST OPERATOR: JOHN DOE	✓	X	X	IN	0940	6415	REPORT TO: COA SUPPLY, LT. JONES	
OPERATOR'S SIGNATURE: John Doe				OUT	0800	6395	DISPATCHER'S SIGNATURE: Hayles Kirslow	
2D OPERATOR				TOTAL		20	REPORT TO	
				IN				

TOTAL

NOTE: Items checked by driver certify appropriate Maintenance Service has been performed. Signatures of the dispatcher, operator, and user certify that vehicle was dispatched and used for Official Government Business ONLY.

DD FORM 1 DEC 53 110 — EDITION OF 1 DEC 53 MAY BE USED. — 10-1000 1

TEAR OFF PORTION

PREVENTIVE MAINTENANCE SERVICES

DATE	TYPE	REGISTRATION NO.	UNIT NO.
31 MAR 54	TRUCK 2½ TON, M34	41138577	115

LEGEND: I—O K; X—DEFECTIVE; *—WEEKLY SERVICE

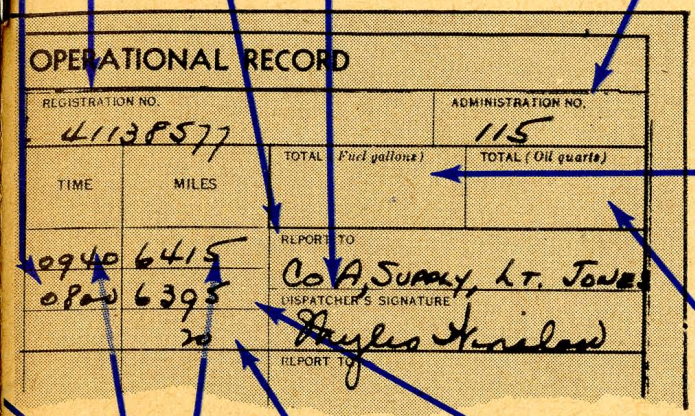
Dispatcher puts in time you check vehicle out of motor pool.

This is the man who ordered the vehicle.

This is for vehicle number. (Some places call it "bumper number.")

And this is the guy that checked you out.

Registration number


OPERATIONAL RECORD

REGISTRATION NO. 41138577

ADMINISTRATION NO. 115

TIME | MILES

TOTAL (Fuel gallons)

TOTAL (Oil quarts)

0940 6415

0800 6395

20

REPORT TO Co A, Supply, Lt. Jones

DISPATCHER'S SIGNATURE Phyllis Hinslow

REPORT TO

Put number of gallons of gasoline here. Be sure and list number of gallons you get each time. If you get it more than once, put it down. If you did not get any put None. Initial after each entry.

If everything is shipshape, put another ✔. If it isn't—put an X here, an X in column that applies, and tell your troubles in space under "Remarks".

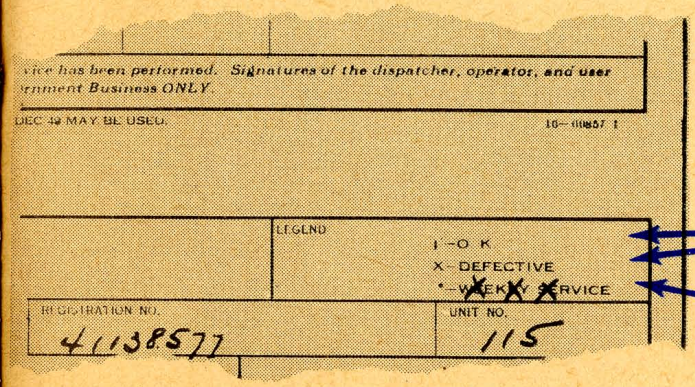
Put the speedometer miles here before you move the vehicle.

This same procedure goes for oil. Put down number of quarts added and initial. If you didn't add any write None and initial.

Don't forget these when you turn your vehicle back to the motor pool.

Don't forget to subtract and put that total miles there. (Now you can see why they put 'er in reverse.)

Don't get fancy in these spaces, 'cause the next driver might need some space too.


...vice has been performed. Signatures of the dispatcher, operator, and user ...rnment Business ONLY.

DEC 49 MAY BE USED.

LEGEND

I—O K

X—DEFECTIVE

*—WEEKLY SERVICE

REGISTRATION NO. 41138577

UNIT NO. 115

Now for your inspections—

Here's the kind of marks you use. Better not confuse the shop by mixing these, 'cause they believe in signs.

Motor pool xxx's out this info given on top of sheet.

THIS IS WHAT YOU DO TO MAKE SURE YOUR VEHICLE'S READY TO GO.

If it's been damaged or something's missing, you'd better have dispatcher show it on here. You might get a chance to pay for it if you don't.

Take a look-see under vehicle for fuel, engine-oil, gear-oil, water, or brake-fluid leaks.

Check fuel, oil and water levels. Look for leaks in engine compartment.

Start the engine and note if starter has enough cranking speed. Make sure vehicle is warmed up before you take off—and that means warming up at high idle only. Be sure on trucks, the buzzer's stopped. If it doesn't—check the air tanks' drain cocks.

Make sure your oil pressure gauge or light indicator, ammeter, tachometer, fuel gauge, air-brake pressure gauge, voltmeter and temperature gauge are all working like they should.

If your vehicle's supposed to have a fire extinguisher, see that the nozzles aren't corroded. See that windshield wiper, horn, lights, mirror are in good condition.

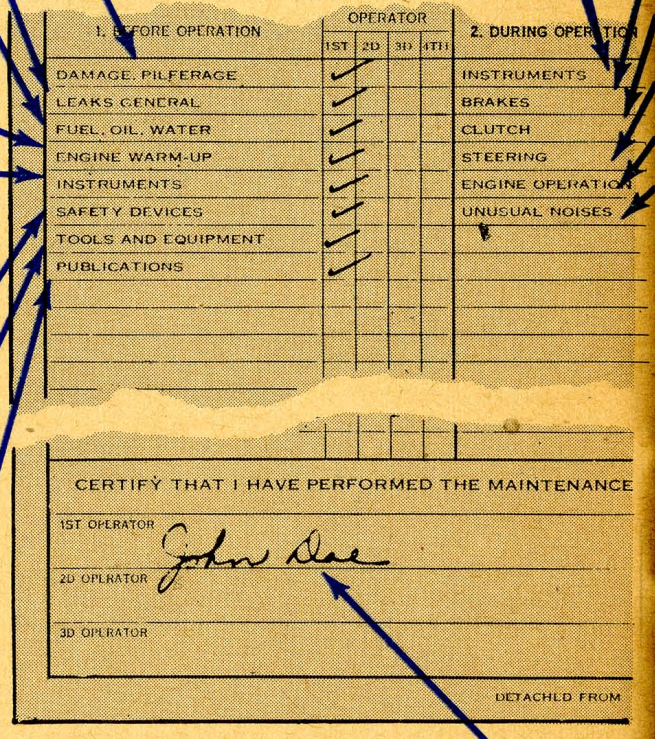
Tools and equipment belonging to vehicle should be there, ready to use, and in the right place. Here's where your vehicle stowage list will help.

Take stock of your publications that tell you about your vehicle. Make sure you've got them. This includes your TM and lube order. And in your pocket or glove compartment you should have SF 91, Driver's Report-Accident; DD 313, US Government Operator's Permit and TM 21-305, Driver's Manual.

YOU PULL UP ANCHOR AND YOU'RE OFF — BETTER WATCH THESE, SO YOU'LL HAVE SMOOTH SAILING.

Your temperature gauge should be in normal range (unless you've got unusual conditions).

If your oil pressure gauge should decide to take a nose-dive, **stop.** Could be you've got no oil, there's a leak, loose bearings or a bad oil pump. Whatever it is, report it so it'll be taken care of.



This is where you sign after you've made sure you've done all the things to your vehicle that you're supposed to do. (Before, During and After Operation)

You've got no blanks to worry about while you're stopped. You check any

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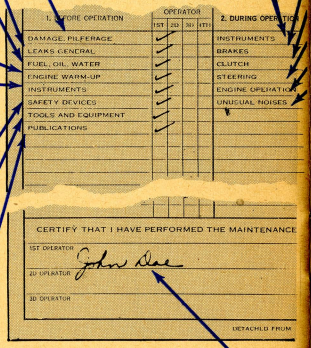


This is where you sign after you've made sure you've done all the things to your vehicle that you're supposed to do. (Before, During and After Operation)

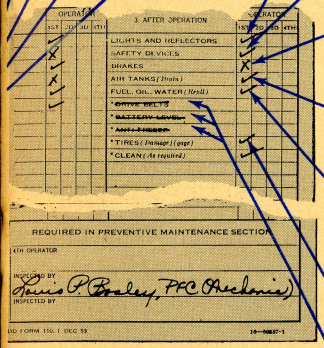
You've got no blanks to worry about while you're stopped. You check any trouble you noticed while operating, and you look over your vehicle for anything which may be going wrong. Make a note of at-halt deficiencies in the "Remarks" space. Of course, you fix anything that you can.

And check your brakes for side pull also so you'll be sure to stop when you want to. If you've got chatter and squealing, but no dame, it's the clutch that's keeping you company—that's not good. It's not supposed to grab, either.

Does she want to shimmy? Does she want to zig instead of zag? Maybe there's too much play in the steering gear, loose parts, not adjusted right, loose wheel bearings, wheels not alined right or no lube.

Be on the lookout for things that can make your engine act up. Does it have the usual power? Does it stall? Is it overheating?

Bend an ear for any unusual noises—rattles, knocks, squeals or hums.



WHEN YOU STOP OR RETURN TO THE MOTOR POOL, YOU'VE GOT SOME CHECKING TO DO.

The lights should be checked. Make sure they go on and off when they should. Get your buddy to help you here—but be sure the stop light goes on when you step on brake pedal. (Don't forget to turn your lights off after you've checked them.)

When you've used the fire extinguisher, make sure you report it so it can be refilled or replaced.

Check your brakes to make sure they're in good order. Your hand brake should be checked but make sure you release it when you start your vehicle. Now's the time to check that noise you heard.

Open the petcocks of the air tanks—drain out all water and close the petcocks.

Look at your lube order to see what type oil you need. If it's low, add some. Better check for leaks if you need lots of oil.

Fill up the spare fuel, oil and water cans.

And you'd better see that there's no glass, nails, etc. in your tires that will do damage.

Motor pool xxx's out these. They'll be taken care of in the bi-weekly inspection.

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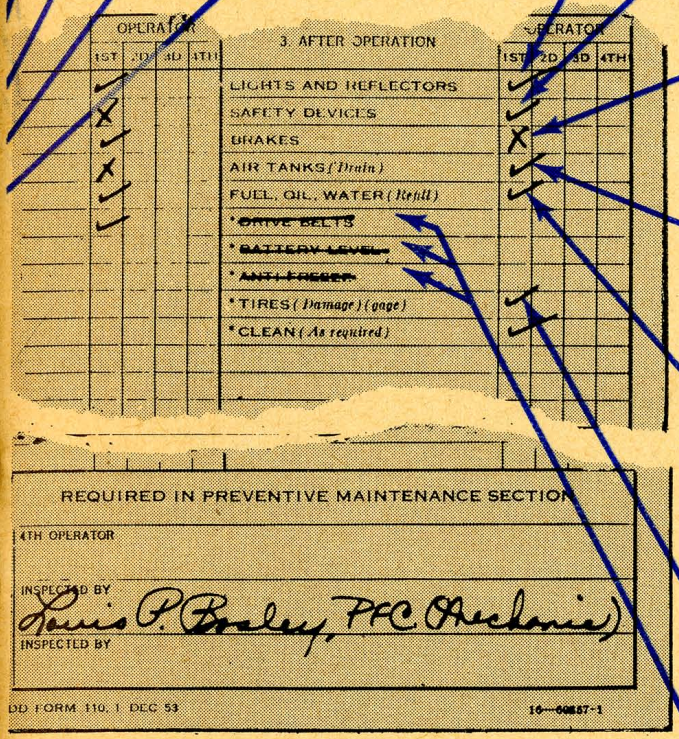

trouble you noticed while operating, and you look over your vehicle for anything which may be going wrong. Make a note of at-halt deficiencies in the "Remarks" space. Of course, you fix anything that you can.

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AND HERE'S WHAT THE BACK SIDE LOOKS LIKE.

Place you went to

Time you arrive

Time you leave

Mileage when you arrived

Load or passengers on vehicle when leaving, shown on same line.

Columns f through h completed when specified by the Military Department concerned.

DESTINATION a	TIME ARRIVE b	TIME DEPART c	ARRIVAL MILEAGE d	LOAD CARGO/ PASS. e	CARGO LOAD/ UNLOAD TIME f	PASS. WAITING TIME g	TRAVEL TIME h	RELEASED BY—SIGNATURE
FROM Bn Motor Pool	—	0800	—					
TO 1. Co A, Supply	0810	0825	6398	3000 LBS				
TO 2. Bn Supply	0840	0850	6405	3000 LBS				
TO 3. Salvage Yard	0905	0925	6410					Lt. J. Jones
TO 4. Bn Motor Pool	0940	—	6415					
TO 5.								
TO 6.								
11.								
TO 12.								
TO 13.								
TOTALS								

Your motor pool will tell you if they want you to fill out this portion.

The person who used you and your vehicle signs (not initials) here when he's finished with you.

U. S. GOVERNMENT PRINTING OFFICE 16—60857-1

REMARKS

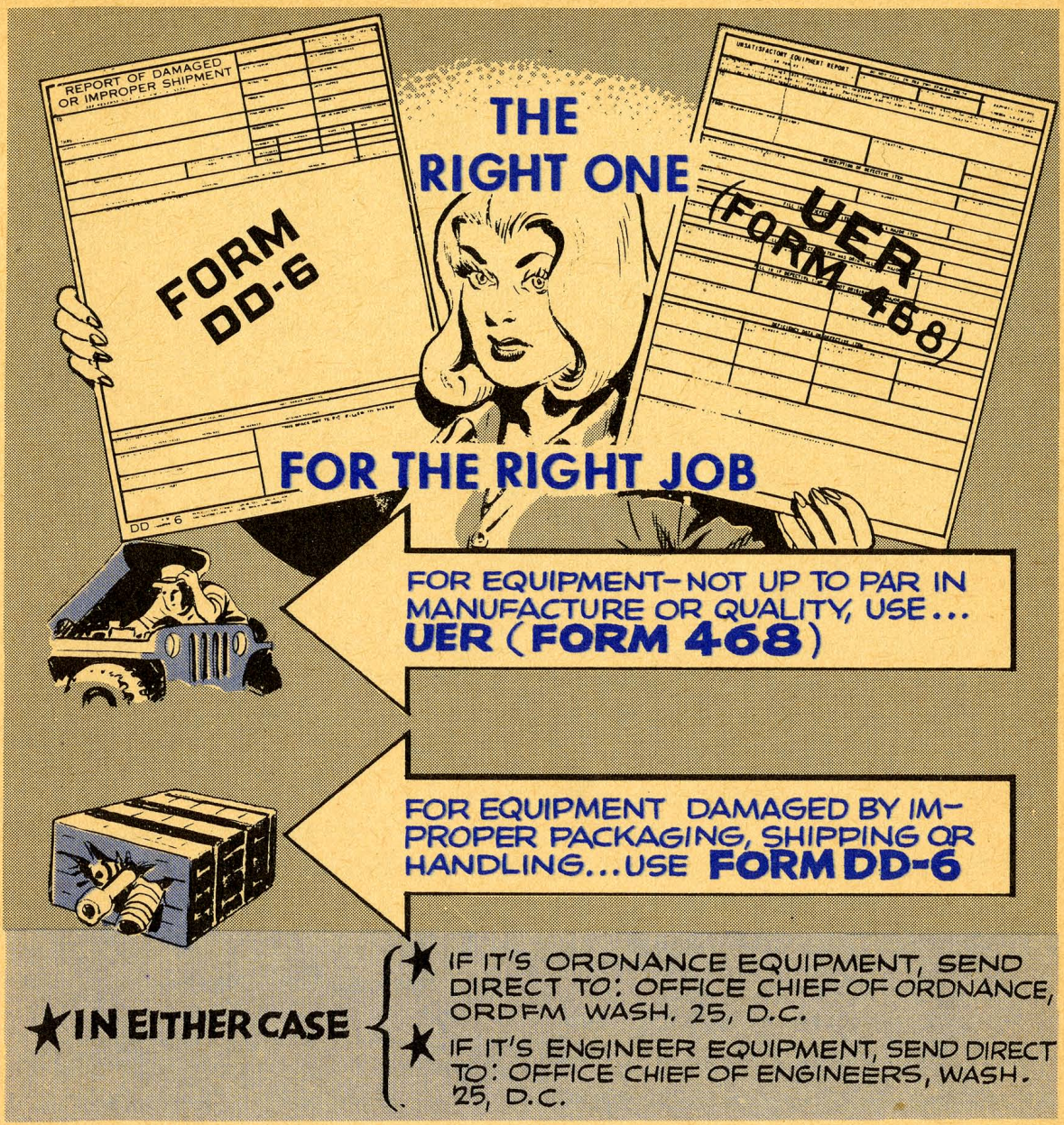
BRAKES - STICK ON LEFT FRONT WHEEL.
STEERING - PULLS TO LEFT FRONT

This space can be used for putting down what was wrong with your vehicle. There's plenty of room to give the whole story.

U. S. GOVERNMENT PRINTING OFFICE 16—60857-1

If a vehicle has been returned to the motor pool and you are the second driver to get it, you do the same things to the vehicle that the first driver did.

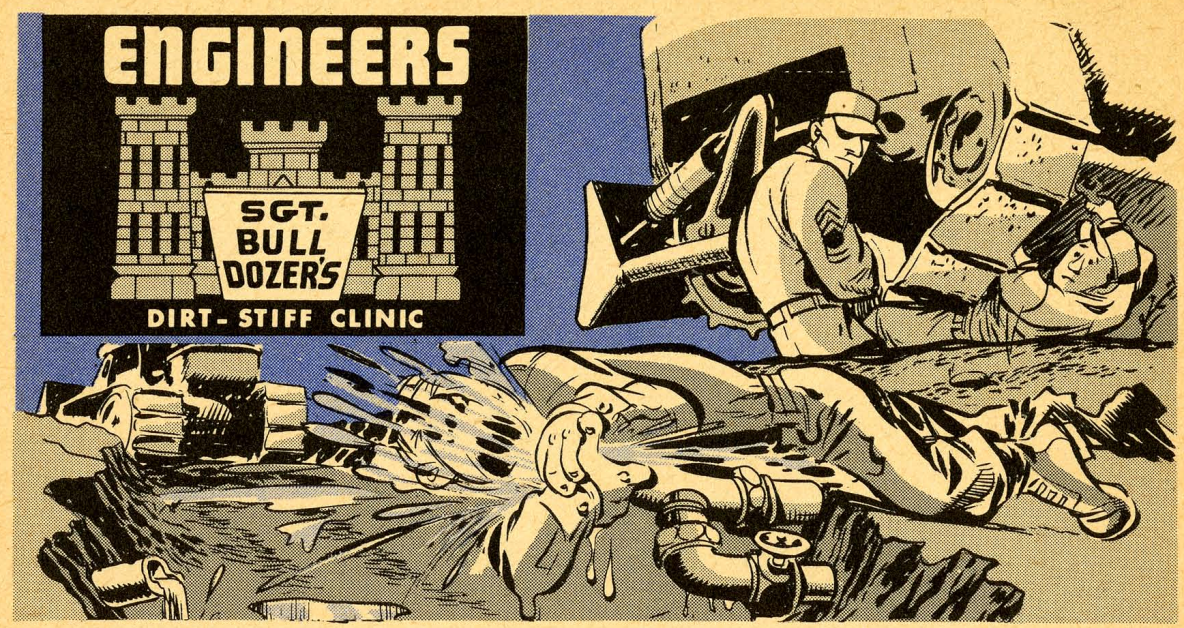
And this includes the before, during and after operation preventive maintenance services. Just pretend you're the first driver and start from scratch.



CAN'T GET ENOUGH?

Here's the answer to your problem if you can't get enough know-how on Ordnance equipment: Take an extension course from the Ordnance School.

See your own CO and read Department of the Army Pamphlet 20-100 which lists courses available. If you want more dope, write to Director, Extension Training Division, The Ordnance School, Aberdeen Proving Ground, Maryland.



DOZER HOSE SAVER

Dear Sgt Dozer,

Our D-4 and D-6 Caterpillar tractors came to us with their dozer hydraulic hoses connected to the cylinder with upright 90° street-L connections. This caused the hose to rise up and form a high loop. And when we operated the blade on a job, trees and branches caught in the loop and damaged the hose at the connection.

We eliminated the problem by adding a 45° street-L fitting to the original 90° fitting. We installed the extended connection so the hose lies more or less flat and eliminates the loop. (See Fig 1.)

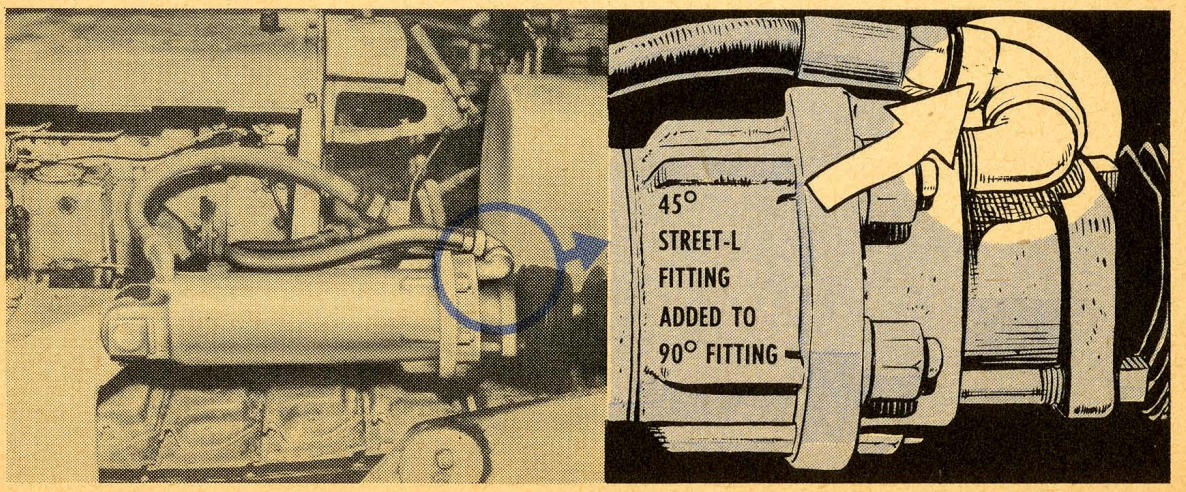
It's worked fine—no more hose connections to replace.

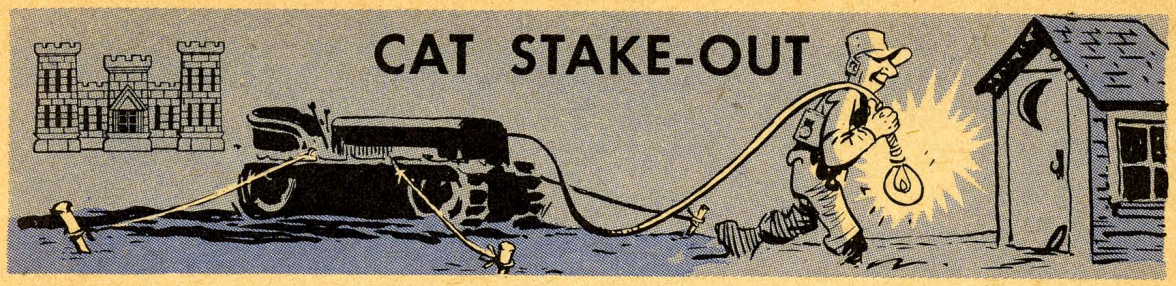
Mr. K. T. F.

Dear Mr. K. T. F.,

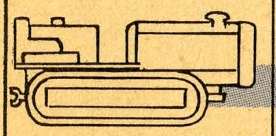
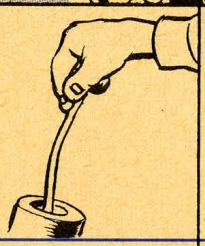
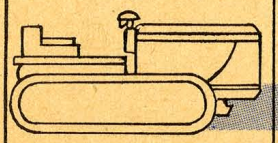
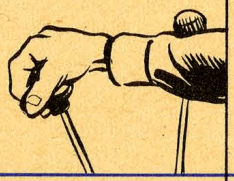
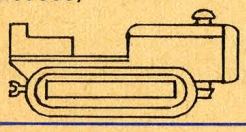
Sounds like good preventive maintenance thinking that'll help some others, too. Just be real sure you've placed the hose so it doesn't get tangled with other moving parts on the tractor.

Bull Dozer



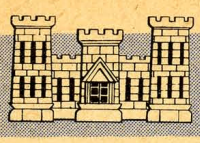


With a Caterpillar tractor that gets staked-out as a stationary power-unit—or with one that must be kept idling for a long spell—you wanna be real sure you've got continuous lubing going on in the transmission. How you protect the transmission when you're not turning a track depends on which size Cat you're responsible for. Here's what to do, to each, and why:

Cat...	You...	Because...
D2 and D4 	Put all gears in NEUTRAL. 	The transmission shafts and the power-takeoff are driven from a pinion that's constantly in mesh with the lower shaft which **is below the oil level.** When the flywheel-clutch is engaged the pinion and lower shaft turn, keeping the transmission sprayed with oil.
D6 and D7 	Leave gear selector in NEUTRAL. Forward-Reverse lever engaged (either FORWARD or REVERSE position). 	If all the gears are in NEUTRAL the bearings on the upper shaft won't get the continuous lubing they need. But with the transmission in NEUTRAL and the Forward-Reverse lever engaged, the lower shaft, which is below the oil level, keeps turning and its gears spray oil so the transmission gears, shafts and bearings get their proper share of oil.
D8 (early models 1H, 8R and 2U series through 2U5306) 	(every four hours or twice a workin' period). 1. Shift into third gear 2. Release both steering clutches 3. Engage flywheel-clutch for about one minute.	With the engine running the rotating shafts replenish the oil supply at the upper and intermediate shaft bearings.
D8 (models with serial numbers 2U5307 and up. 13A1 and up)	Put both the gear selector lever and the Forward-Reverse lever in NEUTRAL.	With the flywheel-clutch engaged, the oil pump in the transmission distributes the lube throughout the transmission.

AND ON ALL CATS

WHEN YOU KNOCK-OFF FOR THE DAY MAKE SURE THE MASTER-CLUTCH IS DISENGAGED SO'S TO KEEP THE CLUTCH PLATES FROM STICKIN'.



LOVE THAT LUBE ORDER!

You're a faithful keeper if you tend your Engineer equipment by its own little lube order. Regardless of its size, shape, power or age, it'll be stronger and live longer if you see to it that it gets the right kind of lubrication care.

Lubing instructions always go along with a piece of equipment . . . so whether it comes to you new or not so new . . . there's always a TM, LO, or the manufacturer's manual that you can rely on to tell you how the lubing chores are handled.

Lost or mutilated LO's need to be replaced on the double. If an LO takes it on the lam or gets too beat up to read, and a replacement isn't easy to come by, you might find it helpful to keep this chart handy as a reference of lubes that are available to users of Engineer equipment.

STANDARD LUBRICANTS

Army Symbol	Civilian	Lubricant	Where Used	Temperatures
OE 10	SAE 10	Engine Oil	Crankcases and air cleaners	Below 32° F.
			Flushing crankcases and gear boxes Break in new engines	All temperatures
OE 30	SAE 30		Crankcases and air cleaners	Above 32° F.
			Motorcycles and some gear boxes	Below 32° F.
			" " " " "	Above 32° F.
OE 50	SAE 50		As required in some engineer equipment	High temperatures
GO 75	SAE 75	Universal Gear Lubricant	Gear boxes	Below 0° F.
GO 90	SAE 90	" " "	" "	Above 0° F.
*GAA		General purpose auto and artillery grease	Chassis fittings, universal joints and wheel bearings	-65° to +125° F
WP	No. 4	Water pump grease 4	Water pumps and expedient waterproofing	All temperatures

*For usage of GAA, see page 15 of this issue

SPECIAL LUBRICANTS

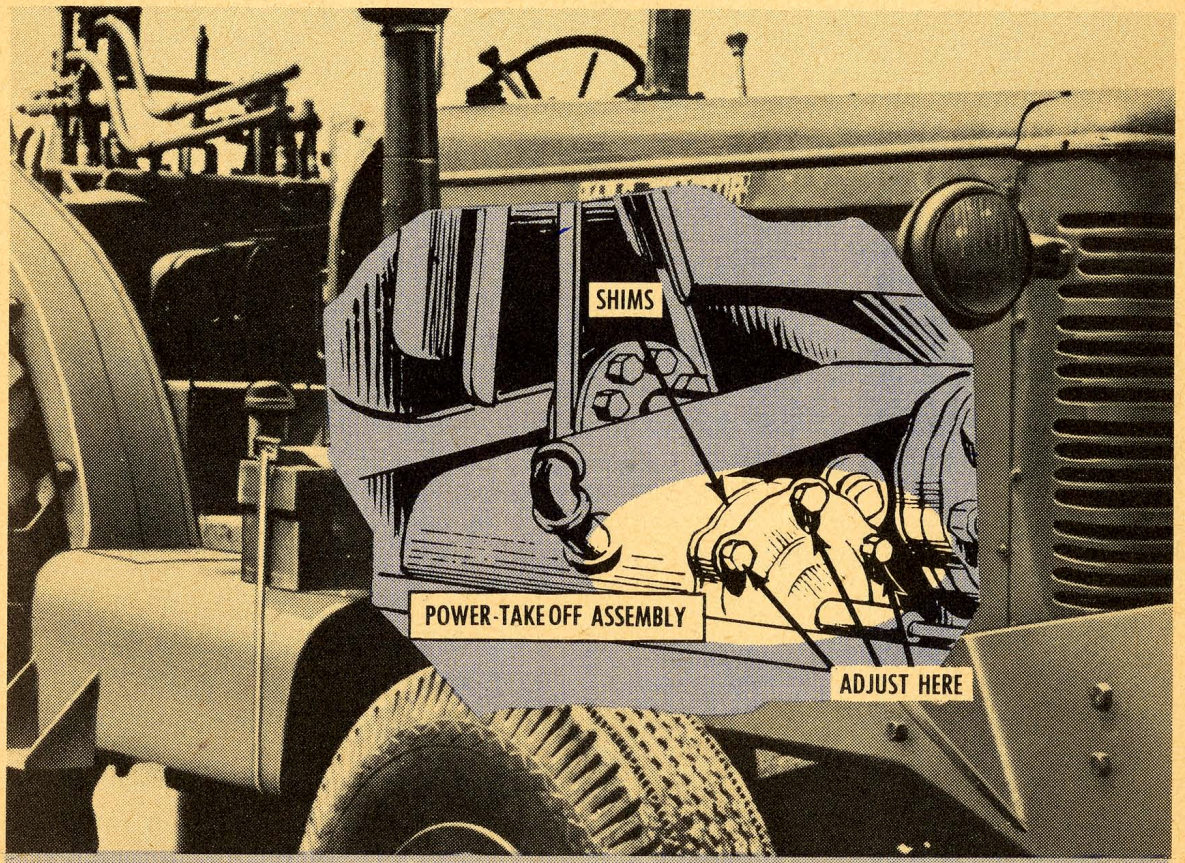
Army Symbol	Civilian	Lubricant	Where Used	Temperatures
CW	—	Chain and wire rope comp	Open gears and some wire rope	All temperatures
PL	—	Preservative oil, light	Oil can lubrication points (instead of OE)	Below 0°
SAL	—	Shock absorber fluid light	Shock absorbers, Delco type	All temperatures
SAH	—	" " " heavy	" " Houdaille type	" "
HB	—	Hydraulic brake fluid	Hydraulic brake systems	" "
OH	—	Hydraulic oil	Hydraulic jacks	" "
NS 3100	—	Two cycle engine oil	Engine lubrication for most two cycle engines	" "

Whatever equipment you handle, lube it by the order and you and your equipment will both live longer.

MRS MODEL 150 TRACTORS

Some MRS Model 150 tractors (Serial Nos. 1914 and up) hit the field with wrong bearing adjustment in the front power-takeoff gear-box. So keep these babies quiet until you set 'em right.

Here's how to go after the needed adjustment and get rid of the shaky shaft:



THE WRONG ADJUSTMENT IN THE POWER-TAKEOFF OF THE MRS 150 HIGH-SPEED TRACTOR CAN CAUSE OVERHEATING AND EXCESSIVE NOISE (OR VIBRATION OF THE POWER-TAKEOFF, SHAFT WOBBLE AND LEAKY SEALS, CHECK FOR THESE COMPLAINTS BEFORE PUTTING YOUR MRS 150 TO WORK—IF HER SERIAL NUMBER IS 1914 OR HIGHER, IF YOU FIND ANY OF THESE MALFUNCTIONS, PUT 'ER IN THE SHOP—QUICK.

Remove the shims under the bearing cap. Bring the cap down with only two capscrews-which you space 180° apart-until the bearings are metal-to-metal. Measure the opening at each capscrew, then adjust all around until all the spacers are equal.

If shims are called for, add .005- to .006-inch to the measured space to allow for the proper adjustment.

That's it, except to watch for overheating after the first two or three hours of operation—give or take may be needed on the shim clearance.

LONG FEELER-GAGE HOLDER

Dear Editor,

Anybody who has got the bejabers burned out of him when checking valve lash (clearance) on the M135 or M211 will find a feeler-gage holder like the one sketched here to be mighty useful.

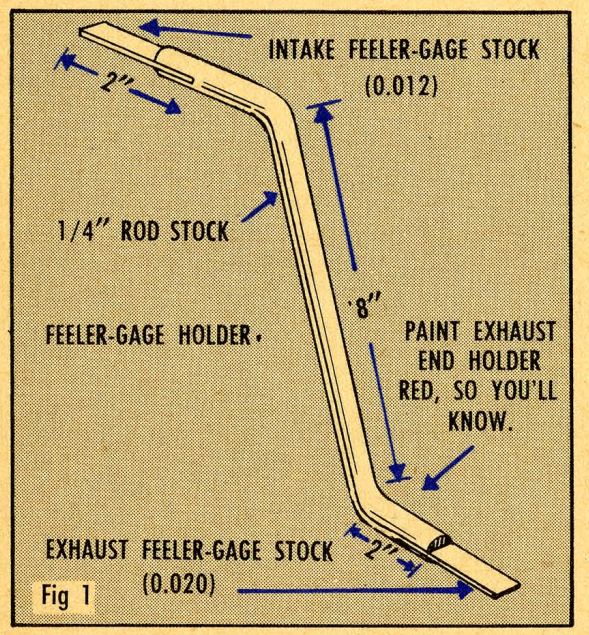


Fig 1

Ours are made from 1/4-inch rod stock about 13 inches long, bent as in Fig 1 and with a couple of inches of feeler-gage stock soldered or riveted to the 2-inch end. Of course, you need two, one of **0.012** for the intake valves and one of **0.020** for the exhaust valves.

You gotta check 'em hot, so now when we adjust our valves with engine running at idle and hot we don't run the risk of burning our hands.

WOJG Steele
Korea

WHICH END'S UP?

Dear Editor,

We had trouble with the pawls having to be replaced on the disassembling bolt tool for the carbine. Some of the men didn't know which end was up. They were using the assembling end for disassembling; the disassembling end for assembling and as a result the ends of the pawls either broke off or bent.

Since we've painted an *A* on the assembling end and a *D* on the disassembling end (Fig 2) we've done away with the broken and bent pawls. Now we have pawls to spare.

Cpl Roger Cory
Aberdeen Proving Ground, Maryland

(Ed Note—Sounds like a good idea for the guys who work on that bolt. Just remember, tho', that a screw that's too tight on the tool can also help damage the pawl ends.)

DISASSEMBLING BOLT TOOL (CARBINE)

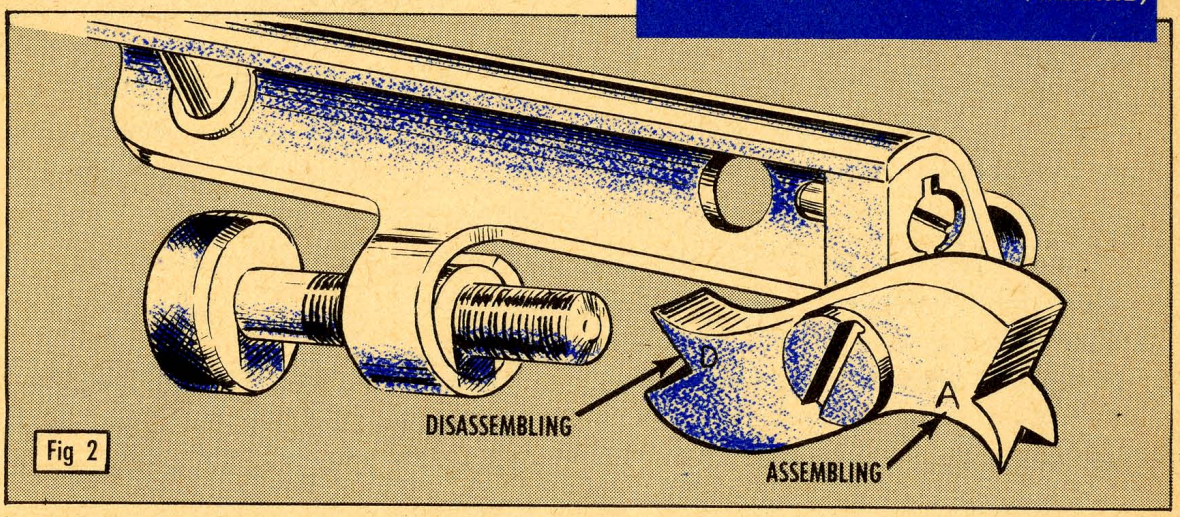


Fig 2

PLATE IN SHAPE

Dear Editor,

On our 2-1/2-ton M135 truck (GMC), we have a protector plate for the fuel tank shut-off valve like it calls for in TB 9-819A-13. We have found that this plate gets bent out of shape by the cab overhang when the vehicle is operated over rough terrain.

By cutting 1-inch from the inside of this plate (Fig 3) the cab no longer bumps the plate.

Lt Roger F. Meade
Camp Chaffee, Arkansas

(Ed Note—It's a darn good idea. Should keep those plates in shape.)

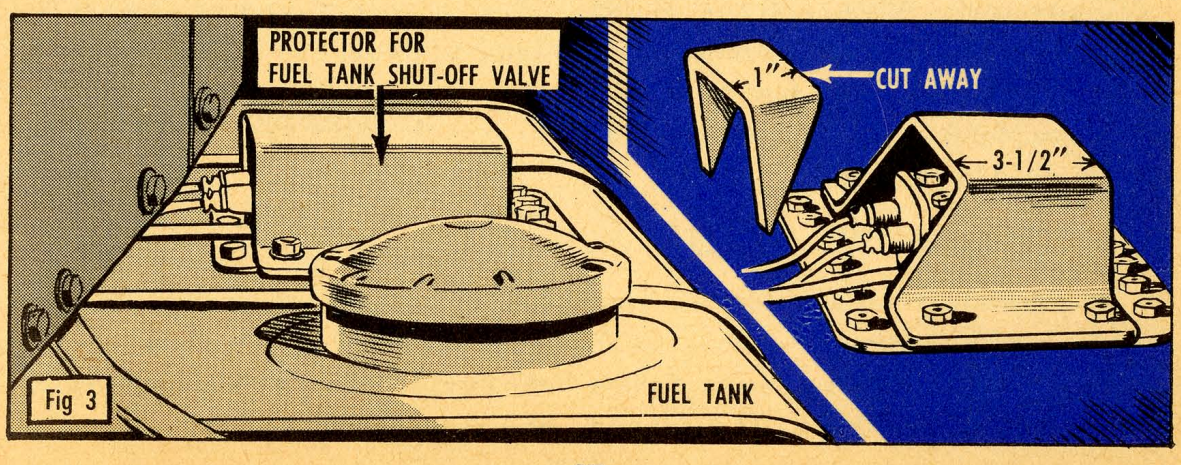
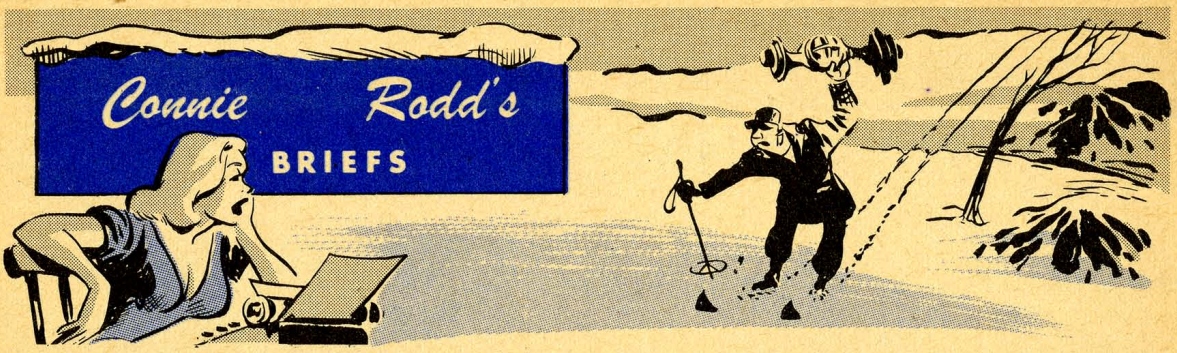


Fig 3



Bum vision blocks?

How's the view from your M75 armored-infantry vehicle lately? If it's being loused up by defective vision blocks—air bubbles, separations along the lamination edges, etc.—get new ones. Order thru regular supply channels. They're Ord Stock No. G244-6300790.

Long and short of it

If the cable connecting your 6TN batteries is too short, make a new one, like TB Ord 559 says. Now that all 6TN's are made the same, the problem's on its way out with the left-overs in supply.

Backlash tolerance

Here's the latest news on standards of traversing and elevating backlash tolerances on the 75-mm, 105-mm, 155-mm and 8-in howitzers and the 155-mm and 240-mm guns: Allow 1/6-turn of the handwheel to govern organizational maintenance and 1/12-turn to govern field maintenance. The manuals are being revised to show this.

5-ton U-joints

There are four concealed bolts in your 5-ton truck's universal joints. You've gotta take the flanges apart to tighten em. Y'want to see para 137, TM 9-837.

Untrained seals

Ever change a grease seal just because it's well lubed? 'Tain't necessary. Those seals have gotta have some lubrication or else they'll dry out and become worthless.

M215 dump trucks

Looseness on the 2-1/2-ton M215 dump truck (GMC) seems to come at the transfer-case and pillow-block mounting bolts. Take a gander at them daily. (And **safety** that bed before you get under it.)

Which way did he go?

Just heard about an M38A1 whose steering bellcrank's self-locking nut and tie-rod end nuts were found to be loose. That's the pivot between you and your wheels—between you and eternity. Check now—and be sure yours is tight. Read all about it in TM 9-804.

Battery choke

You fellows who're plastering your batteries with paint better think it over, first. If those vent holes on top of the battery get plugged, brother you've had it. The fumes'll eventually build up on the inside and blow it sky-high. So, save the paint, chum.

PERPETUAL INDEX

Your monthly reference guide to all subjects covered in the last 12 issues of PS Magazine

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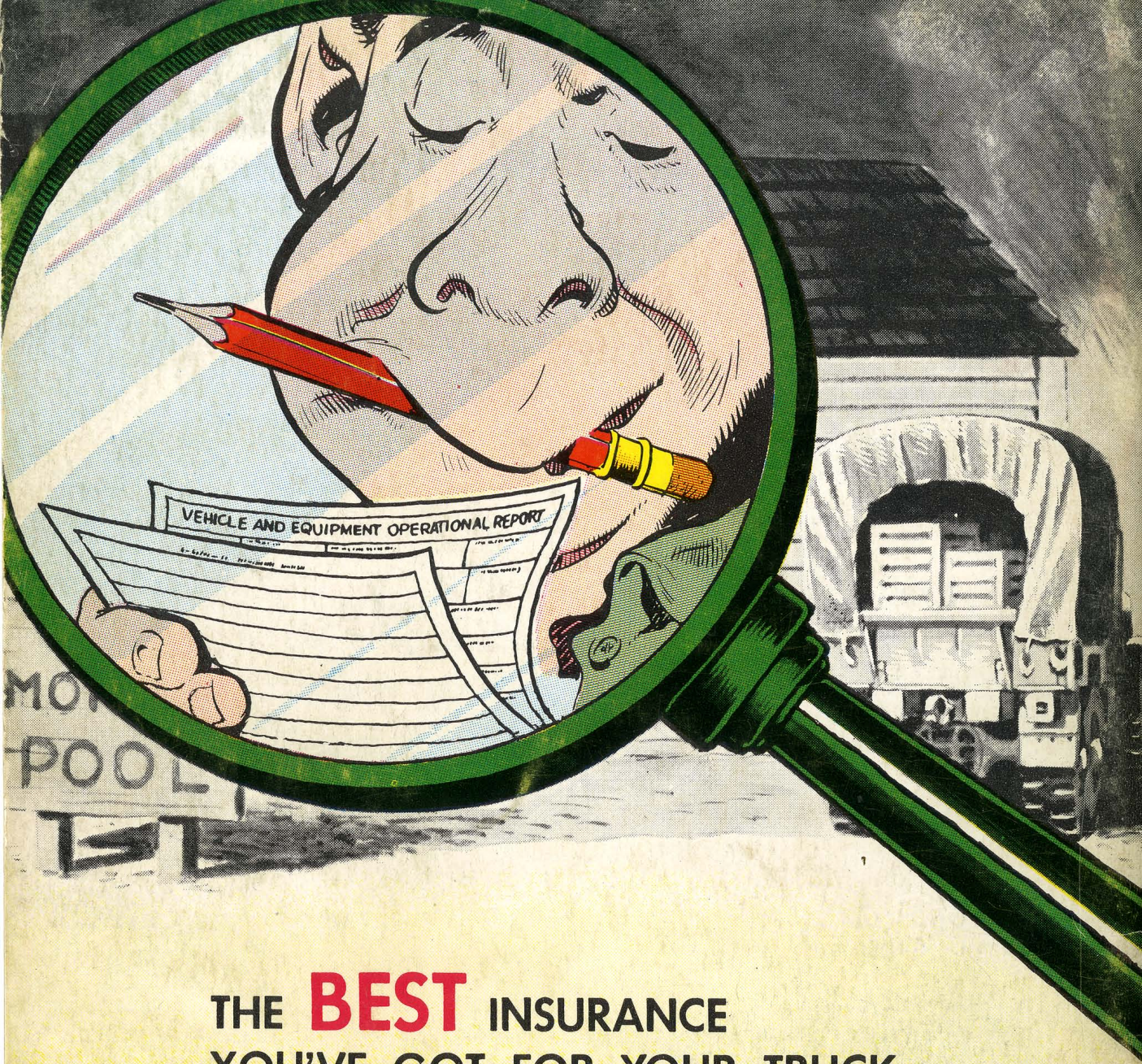
2C—INSIDE FRONT COVER; 3C—INSIDE BACK COVER; 4C—OUTSIDE BACK COVER



THE BEST INSURANCE YOU'VE GOT FOR YOUR TRUCK...

DD FORM 110

(Your trip ticket)

- It's your authority to use the vehicle.
- It lets everybody know how you take care of your vehicle. (Before, during and after operation checks.)
- If used right, it'll help to keep your vehicle rolling...through thick or thin.

USE IT...RIGHT

SEE SPECIAL ARTICLE ON PAGE 36